TRADEMARK ASSIGNMENT

Electronic Version v1.1
Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	SECURITY INTEREST

CONVEYING PARTY DATA

Name	Formerly	Execution Date	Entity Type
Plextronics, Inc.		09/20/2013	CORPORATION: DELAWARE

RECEIVING PARTY DATA

Name:	Solvay America, Inc.
Street Address:	3333 Richmond Avenue
City:	Houston
State/Country:	TEXAS
Postal Code:	77098
Entity Type:	CORPORATION: DELAWARE

PROPERTY NUMBERS Total: 3

Property Type	Number	Word Mark
Registration Number:	3948114	PLEXTRONICS LIGHT. POWER. CIRCUITRY.
Registration Number:	3004841	PLEXCORE
Registration Number:	2902063	PLEXTRONICS

CH $90.00 3948114

CORRESPONDENCE DATA

Fax Number: 3127069125
Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent via US Mail.
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Correspondent Name: Richard M. Assmus
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Address Line 2: Mayer Brown LLP
Address Line 4: Chicago, ILLINOIS 60606

ATTORNEY DOCKET NUMBER:	10437752
NAME OF SUBMITTER:	Richard M. Assmus

Signature:	/rma/
Date:	09/23/2013

Total Attachments: 40
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INTELLECTUAL PROPERTY SECURITY AGREEMENT

This INTELLECTUAL PROPERTY SECURITY AGREEMENT (as amended, amended and restated, supplemented or otherwise modified from time to time, the "***IP Security Agreement***") dated September 20, 2013 is made by PLEXTRONICS, INC., a Delaware corporation (the "***Grantor***"), in favor of SOLVAY AMERICA,INC., a Delaware corporation ("***Solvay***"), as collateral agent (in such capacity, the "***Collateral Agent***") for itself and the other investors set forth on **Schedule A** to the Security Agreement (as defined below) (collectively with Solvay, the "**Lenders**"). Capitalized terms used herein and not otherwise defined herein shall have the meanings assigned to such terms in **Exhibit A** attached hereto or the Security Agreement, as applicable.

WHEREAS, pursuant to the Security Agreement dated as of September 20, 2013 (as amended, restated, amended and restated, supplemented, waived or otherwise modified or replaced from time to time, the "***Security Agreement***"), by and between the Grantor and the Collateral Agent, the Grantor has granted to the Collateral Agent for the benefit of the Lenders a first priority security interest to support certain obligations of the Grantor owed to the Lenders under the terms of the convertible notes issued to each Lender in accordance with the terms of that certain Convertible Note and Warrant Purchase Agreement dated as of September 20, 2013 (as amended, restated, amended and restated, supplemented, waived or otherwise modified or replaced from time to time, the "***Purchase Agreement***").

WHEREAS, the Grantor, the Collateral Agent and the Lenders are parties to that certain Third Amended and Restated Intercreditor Agreement dated as of September 20, 2013 (as amended, restated, amended and restated, supplemented, waived or otherwise modified from time to time, the "***Intercreditor Agreement***"), which sets forth the relative rights and obligations of the Collateral Agent and the various Lenders as it relates to the Collateral.

WHEREAS, pursuant to the terms and conditions set forth in the Security Agreement, the Grantor has granted to the Collateral Agent a security interest in all personal property of the Grantor, including all Intellectual Property of the Grantor as hereinafter defined, including without limitation, all Trademarks, Patents, Copyrights, Trade Secrets and IP Agreements as hereinafter defined, all to secure the payment and performance of the Obligations (as defined in the Security Agreement).

WHEREAS, in order to evidence such security interest and to perfect the Collateral Agent's rights in such Intellectual Property, the Grantor has agreed to execute this IP Security Agreement for recording with the U.S. Patent and Trademark Office, the United States Copyright Office and other governmental authorities and agrees to execute any additional documents as necessary to record such security interest with the U.S. Patent and Trademark Office, the U.S. Copyright Office or such other governmental authorities.

NOW, THEREFORE, for and in consideration of the premises, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Grantor agrees as follows:

SECTION 1. Grant of Security. The Grantor hereby grants to the Collateral Agent, on behalf of the Lenders, a security interest in all of such Grantor's right, title and interest, whether now owned or existing or hereafter created, acquired or arising, in and to the following (the "***IP Collateral***"):

(a) all Patents, in each case now existing or hereafter adopted or acquired, including those set forth in **Schedule B** hereto;

(b) all Trademarks, in each case now existing or hereafter adopted or acquired, including those set forth in **Schedule B** hereto; and

(c) all Copyrights, in each case now existing or hereafter adopted or acquired, including those set forth in **Schedule B** hereto.

SECTION 2. Recordation. This IP Security Agreement has been executed and delivered by the Grantor for the purpose of recording the grant of security interest herein with the United States Patent and Trademark Office and the United States Copyright Office, or other governmental agency. The Grantor authorizes and requests that the Register of Copyrights, the Commissioner for Patents and the Commissioner for Trademarks record this IP Security Agreement.

SECTION 3. Representations, Warranties And Covenants. The Grantor represents, warrants and covenants that, except as otherwise set forth herein, in the Security Agreement or disclosure schedules incorporated into the Purchase Agreement: (i) **Schedule B** sets forth a true and complete list of all Patent, Trademark and Copyright registrations and pending applications now owned or, as indicated, co-owned by the Grantor; (ii) the Intellectual Property, including such Patent, Trademark and Copyright applications and registrations set forth on **Schedule B**, are subsisting and have not been adjudged invalid or unenforceable, in whole or in part, and there is no litigation or proceeding pending concerning the validity or enforceability of the Intellectual Property or the Grantor's ownership rights therein; (iii) to the best of the Grantor's knowledge, each of the Intellectual Property and IP Agreements is valid and enforceable; (iv) to the best of the Grantor's knowledge, there is no infringement by a third party of the Intellectual Property; (v) no claim has been provided or made known to the Grantor that the use of any of the Intellectual Property does or may violate the rights of any third person, and to the best of the Grantor's knowledge, there is no infringement by the Grantor of the intellectual property rights of others; (vi) subject to the co-owned Intellectual Property as indicated on **Schedule B**, the Grantor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to each of the Intellectual Property free and clear of any liens, charges, encumbrances and adverse claims, including pledges, assignments, licenses, registered user agreements and covenants by the Grantor not to sue third persons, other than (A) the security interest and assignment created by the Security Agreement and this IP Security Agreement, (B) the security interests granted to the Junior Creditors, as set forth in the Intercreditor Agreement, or (C) licenses, sub-licenses or end-user agreements as set forth on Schedule 3.13(f) of the disclosure schedules to the Purchase Agreement; (vii) the Grantor has the unqualified right to enter into this IP Security Agreement and to perform its terms and will take all steps that may be reasonably necessary so as to ensure that the Grantor shall continue to comply with the covenants herein contained; (viii) the Grantor has used its best efforts to, and will continue to use its best efforts in the future to use, proper statutory and other proprietary notices in connection with its use of the Patents, Trademarks or Copyrights; and (ix) the Grantor has used its best efforts to, and will continue to use its best efforts to use for the duration of this IP Security Agreement, consistent standards of quality in its manufacture and provision of products and services sold or provided under the Trademarks.

SECTION 4. No Transfer Or Inconsistent Agreements. Without the Collateral Agent's prior written consent, the Grantor will not (i) sell, transfer, assign, pledge, encumber, or grant any license or sublicense of any rights under or with respect to any of its Intellectual Property owned or co-owned by it except in the ordinary course of business, or (ii) enter into any agreement that is inconsistent with the Grantor's obligations under this IP Security Agreement or the Security Agreement.

SECTION 5. After-Acquired Intellectual Property.

5.1 After-Acquired Intellectual Property. If, before the Obligations shall have been finally paid and satisfied in full and the commitments of the Lenders to make advances under the Purchase Agreement have been terminated, the Grantor obtains any right, title or interest in or to any other or new Intellectual Property, the provisions of this IP Security Agreement shall automatically apply thereto and the Grantor shall promptly provide to the Collateral Agent notice thereof in writing and execute and deliver to the Collateral Agent such documents or instruments as the Collateral Agent may reasonably request further to implement, preserve or evidence the Collateral Agent's' interest therein.

5.2 Amendment to Schedule. The Grantor authorizes the Collateral Agent to modify this IP Security Agreement, without the necessity of the Grantor's further approval or signature, solely so as to amend **Schedule B** hereto to include any future or other Patent, Trademark or Copyright registrations or applications.

SECTION 6. Execution in Counterparts. This IP Security Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement.

SECTION 7. Grants, Rights and Remedies. This IP Security Agreement has been entered into in conjunction with the provisions of the Security Agreement and the Intercreditor Agreement. The Grantor does hereby acknowledge and confirm that the grant of the security interest hereunder to, and the rights and remedies of, the Collateral Agent with respect to the Collateral are more fully set forth in the Security Agreement and the Intercreditor Agreement, the terms and provisions of which are incorporated herein by reference as if fully set forth herein.

SECTION 8. Governing Law. THIS IP SECURITY AGREEMENT AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES UNDER THIS IP SECURITY AGREEMENT AND ALL CLAIMS RELATING TO THE SUBJECT MATTER HEREOF, WHETHER SOUNDING IN CONTRACT LAW OR TORT LAW, SHALL BE CONSTRUED IN ACCORDANCE WITH AND GOVERNED BY THE LAWS OF THE STATE OF DELAWARE.

SECTION 9. Severability. In case any one or more of the provisions contained in this IP Security Agreement should be held invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired thereby (it being understood that the invalidity of a particular provision in a particular jurisdiction shall not in and of itself affect the validity of such provision in any other jurisdiction). The parties hereto shall endeavor in good-faith negotiations to replace the invalid, illegal or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the invalid, illegal or unenforceable provisions.

* Remainder of Page Intentionally Blank *

IN WITNESS WHEREOF, the Grantor has caused this IP Security Agreement to be duly executed and delivered by its officer thereunto duly authorized as of the date first above written.

PLEXTRONICS, INC., as Grantor

By: _____

Name: Andrew W. Hannah

Title: President and Chief Executive Officer

Accepted and Agreed to:

SOLVAY AMERICA, INC., as Collateral Agent

By: _____

Name: Michael Lacey

Title: President

Exhibit A
Additional Definitions

"**Copyrights**" means all of the following: (a) all copyright rights in any work subject to the copyright laws of the United States or any other country or group of countries, whether as author, assignee, transferee or otherwise including but not limited to copyrights in software and all rights in and to databases, all designs (including but not limited to industrial designs, Protected Designs within the meaning of 17 U.S.C. §1301 et. seq. and European Community designs), and all Mask Works (as defined under 17 U.S.C. §901 of the U.S. Copyright Act), whether registered or unregistered, and (b) all registrations and applications for registration of any such copyright in the United States or any other country or group of countries, including registrations, supplemental registrations and pending applications for registration in the United States Copyright Office listed on **Schedule B** and (c) all proceeds of and the right to sue or otherwise recover for any past, present and future infringement or other violation thereof, or enforcement of any Copyright.

"**General Intangibles**" means all "General Intangibles" as defined in the UCC, including all choses in action and causes of action and all other intangible personal property of the Grantor of every kind and nature (other than accounts (as defined in the UCC)) now owned or hereafter acquired by the Grantor, including corporate or other business records, indemnification claims, contract rights (including rights under leases, whether entered into as lessor or lessee, and other agreements), Intellectual Property, goodwill, registrations, franchises and tax refund claims.

"**Intellectual Property**" means all Patents, Copyrights, Trademarks, Trade Secrets, domain names, and all inventions, designs, confidential or proprietary technical and business information, know-how, show-how and other proprietary data or information and all related documentation.

"**IP Agreements**" means all agreements granting to or receiving from a third party any rights to Intellectual Property to which the Grantor, now or hereafter, is a party.

"**Patents**" means all of the following: (a) all letters patent of the United States or the equivalent thereof in any other country or group of countries, and all applications for letters patent of the United States or the equivalent thereof in any other country or group of countries, including those listed on **Schedule B**, (b) all reissues, continuations, divisions, provisionals, continuations-in-part or extensions thereof, and the inventions disclosed or claimed therein, including the right to make, use and/or sell the inventions disclosed or claimed therein and (c) all proceeds of and the right to sue or otherwise recover for any past, present and future infringement or other violation thereof, or for enforcement of any Patent.

"**Trademarks**" means all of the following: (a) all domestic and foreign trademarks, trade names, service marks, corporate names, company names, business names, fictitious business names, trade styles, trade dress, logos, service marks, other source or business identifiers, designs and General Intangibles of like nature, now owned or hereafter adopted or acquired, all registrations thereof, if any, including all registration and recording applications filed in connection therewith in the United States Patent and Trademark Office listed on **Schedule B** and all renewals thereof, including those listed on **Schedule B** (provided that no security interest

shall be granted in United States intent-to-use trademark applications to the extent that, and solely during the period, if any, in which, the grant of a security interest therein would impair the validity or enforceability of such intent-to-use trademark applications under applicable federal law), (b) all goodwill associated therewith or symbolized thereby and (c) all proceeds of, and the right to sue or otherwise recover for any past, present and future infringement, dilution or other violation of any of the foregoing or for any injury to the related goodwill associated with the use of any Trademark or for enforcement of any Trademark.

"**Trade Secrets**" means common law and statutory trade secrets and all other confidential or proprietary or useful information and all know-how obtained by or used in or contemplated at any time for use in the business of the Grantor (all of the foregoing being collectively called a "**Trade Secret**"), whether or not such Trade Secret has been reduced to a writing or other tangible form, including all documents and things embodying, incorporating or referring in any way to such Trade Secret, all Trade Secret licenses, and including the right to sue for and to enjoin and to collect damages for the actual or threatened misappropriation of any Trade Secret and for the breach or enforcement of any such Trade Secret license.

[End of Exhibit A]

Schedule A
Lenders

Solvay America, Inc.
Newlin Investments, L.P.

Schedule B
Intellectual Property

Patents

See attached PDF

Trademarks

Country	Mark	Reg. No.	Reg. Date	Status	Next Action Due
China	PLEXCORE	Pending; Application No. 12599864	Pending	Filed	Awaiting Trademark Office Review
EU	PLEXTRONICS	008231458	11/22/2009	Registered	Renewal – 04/21/2019
Japan	PLEXTRONICS	5411900	05/13/2011	Registered	2nd Payment of Registration Fee 05/13/2016
Japan	PLEXCORE	Pending; Application No. 2013-38158	Pending	Filed	Awaiting Trademark Office Review
South Korea	PLEXTRONICS	40/880575	9/15/2011	Registered	Renewal 09/15/2021
South Korea	PLEXCORE	Pending; Application No. 40-2013-32960	Pending	Filed	Awaiting Trademark Office Review
United States	PLEXTRONICS LIGHT. POWER. CIRCUITRY	3,948,114	04/19/2011	Registered	Declaration of Use 04/19/2017
United States	PLEXCORE	3,004,841	10/04/2005	Registered	Renewal 10/04/2015
United States	PLEXTRONICS	2,902,063	11/09/2004	Registered	Renewal 11/09/2014
EU	PLEXCORE	Pending; Application No. 012151056	Pending	Under Examination	
Taiwan	PLEXCORE	Pending; Application No. 102026816	Pending	Pending	

Copyrights

Registered Copyrights

None.

Copyright Application

None.

TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.200	United States of America	10004782	4-Dec-01		6602974	5-Aug-03	Closed	Carnegie Mellon University
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.210	United States of America	11088341	24-Mar-05		8227566	24-Jul-12	Issued	Carnegie Mellon University
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.300	United States of America	10417244	16-Apr-03		7098294	29-Aug-06	Issued	Carnegie Mellon University
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.310	United States of America	10634035	4-Aug-03		6887965	3-May-05	Closed	Carnegie Mellon University
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME (Reissue of US 6,602,974)	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.450	United States of America	11197727	4-Aug-05		RE40813	30-Jun-09	Issued	Carnegie Mellon University
POLYTHIOPHENES, BLOCK COPOLYMERS MADE THEREFROM, AND METHODS OF FORMING THE SAME (Reissue of US 6,887,965)	The present invention relates to polythiophenes, particularly regioregular head-to-tail poly(3-alkylthiophenes) (HT-PATs), block copolymers made therefrom, and their methods of formation. The present invention provides HT-PATs with well-defined, specific end-groups, functionalization of the defined HT-PATs, and incorporation of end group functionalized HT-PATs into block copolymers with structural polymers. The intrinsically conductive diblock and triblock copolymers, formed from the HT-PATs, have excellent conductivity and low polydispersities that are useful in a number of applications. The block copolymers of the present invention have been found to exhibit conductivities that range from a low of 10.sup.-8 S/cm for certain applications to as high as several hundred S/cm or more.	Richard D. McCullough, Jinsong Liu, Paul C. Ewbank, Elena E. Sheina	PLX-9000.460	United States of America	11799760	2-May-07		RE41587	24-Aug-10	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.200	United States of America	9247420	10-Feb-99		6166172	26-Dec-00	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.560	Japan	2000031330	9-Feb-00		4166918	8-Aug-08	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.561	Japan	2007329941	9-Feb-00				Pending	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.700	European Patent Office	1027143	9-Feb-00		EP 1028136	24-May-06	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.750	France	1027143	9-Feb-00		EP 1028136	24-May-06	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.760	Germany	60028103508	9-Feb-00		EP-1028136	24-May-06	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.770	United Kingdom	1027143	9-Feb-00		EP 1028136	24-May-06	Issued	Carnegie Mellon University

A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.780	Italy	1027143	9-Feb-00		600 28 1035.5-08	24-May-06	Issued	Carnegie Mellon University
A METHOD OF FORMING POLY-3-(SUBSTITUTED) THIOPHENES	A method of forming a regioregular polythiophene from a polymerization reaction is described. The method proceeds by combining a soluble thiophene having at least two leaving groups with an organomagnesium reagent to form a regiochemical isomer intermediate, and adding thereto an effective amount of Ni(II) catalyst to initiate the polymerization reaction.	Richard D. McCullough, Robert S. Loewe	PLX-9001.790	Netherlands	1027143	9-Feb-00		EP 1028136	24-May-06	Issued	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.100	United States of America	60667065	1-Apr-05				Expired	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.200	United States of America	11394202	31-Mar-06		7452958	18-Nov-08	Issued	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.300	United States of America	12250517	13-Oct-08		7834106	16-Nov-10	Issued	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.500	PCT	PCTUS2006011840	31-Mar-06				Expired	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.550	Republic of Korea	1020077025253	31-Mar-06		1275449	6/10/2013	Issued	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.560	Japan	2008504411	31-Mar-06				Pending	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.561	Japan	2012121724	31-Mar-06				Pending	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.570	Singapore	2007088438	31-Mar-06		135794	31-Mar-10	Issued	Carnegie Mellon University

LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.580	China	2006800165243	31-Mar-06		200680016524.3	7-Dec-11	Issued	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.640	Hong Kong	81145050	30-Dec-08				Pending	Carnegie Mellon University
LIVING SYNTHESIS OF CONDUCTING POLYMERS INCLUDING REGIOREGULAR POLYMERS, POLYTHIOPHENES, AND BLOCK COPOLYMERS	Regioregular poly(3-alkylthiophenes) and other polythiophenes can be prepared by living polymerization which have good solubility, processability and environmental stability. The polymerization method can afford regioregular poly(3-alkylthiophenes) in high yields. Kinetic study of polymerization revealed the living character of this process. The molecular weight of poly(3-alkylthiophenes) is a function of the molar ratio of the monomer to nickel initiator, and conducting polymers with relatively narrow molecular weight distribution (PDI<1.5) are now readily available. Sequential monomer addition resulted in new block copolymers containing different poly(3-alkylthiophene) segments, which further confirms the "livingness" of this system. Other synthetic methods can be used as well to conduct living polymerization. Blends and electronic devices can be prepared.	Richard D. McCullough, Elena E. Sheina, Mihaela C. Iovu	PLX-9002.700	European Patent Office	67490003	31-Mar-06				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.200	United States of America	11849220	31-Aug-07		7671173	2-Mar-10	Issued	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.500	PCT	PCTUS2007077465	31-Aug-07				Expired	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.550	Republic of Korea	1020097006604	31-Aug-07				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.560	Japan	2009526944	31-Aug-07				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.580	China	2007800325355	31-Aug-07				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.640	Hong Kong	91107270	17-Nov-09				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.700	European Patent Office	78710530	31-Aug-07				Pending	Carnegie Mellon University
PURIFICATION METHODS AND PURIFIED POLYMERS	Metal complexing agents are used to purify polymers including conducting polymers to provide very low metal content. The process comprises precipitating the polymer in solution into a solvent system comprising the metal complexing agent. Very low levels including undetectable levels of metals such as nickel and magnesium can be achieved. High purity polymers are used in electronics and photovoltaic applications.	Richard D. McCullough, Mihaela C. Iovu	PLX-9003.900	Taiwan R.O.C.	96132655	31-Aug-07				Pending	Carnegie Mellon University

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah	PLX-0001.100	United States of America	60612641	24-Sep-04	n/a	n/a	n/a	Expired	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved.	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.200	United States of America	11234373	26-Sep-05	US20060076050	7790979	7-Sep-10	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.500	PCT	PCTUS2005034043	26-Sep-05	WO2006036756	n/a	n/a	Expired	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.550	Republic of Korea	1020077009137	26-Sep-05		n/a	n/a	Abandoned	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.560	Japan	2007533636	26-Sep-05		4981672	27-Apr-12	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.570	Singapore	2007020611	26-Sep-05				Pending	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.571	Singapore	2009063512	26-Sep-05		155965	31-May-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.580	China	2005800369871	26-Sep-05		ZL200580036987 1	20-Jan-10	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.640	Hong Kong	81050955	7-May-08		1115229	27-Aug-10	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.700	European Patent Office	58101759	26-Sep-05		1805825	24-Aug-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.720	Belgium	58101759	26-Sep-05		EP1805825	24-Aug-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.750	France	58101759	26-Sep-05		EP1805825	24-Aug-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.760	Germany	58101759	26-Sep-05		602005029796	24-Aug-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved.	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.770	United Kingdom	58101759	26-Sep-05		EP1805825	24-Aug-11	Issued	Plextronics	
OPV	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR PHOTOVOLTAIC CELLS	Regioregular polythiophene polymers can be used in photovoltaic applications including copolymers and blends. The polymer can comprise heteroatoms in the side groups. Better efficiencies can be achieved	Shawn P. Williams, Darin Laird, Troy D. Hammond, Andrew Hannah, Elena E. Sheina, Shijun Jia	PLX-0001.790	Netherlands	58101759	26-Sep-05		EP1805825	24-Aug-11	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.100	United States of America	60612640	24-Sep-04	n/a	n/a	n/a	Expired	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.200	United States of America	11234374	26-Sep-05	US20060078761			Pending	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.500	PCT	PCTUS2005034042	26-Sep-05	WO2006036755	n/a	n/a	Expired	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.550	Republic of Korea	1020077009138	26-Sep-05				Pending	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.551	Republic of Korea	1020137001837	23-Jan-13				Pending	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.560	Japan	2007533635	26-Sep-05		5041535	5-Jul-12	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.570	Singapore	2007021017	26-Sep-05				Pending	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.571	Singapore	2009063520	26-Sep-05		155966	31-May-11	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.580	China	2005800368436	26-Sep-05				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.640	Hong Kong	81050964	7-May-08				Pending	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.700	European Patent Office	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.720	Belgium	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.750	France	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.760	Germany	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.770	United Kingdom	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
OLED	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES FOR ELECTROLUMINESCENT DEVICES	Regioregular polythiophenes having heteroatoms in the substituents can be used in hole injection layer and hole transport layers for electroluminescent devices. Copolymers and organic oxidants can be used. Homopolymers can be used. Metallic impurities can be removed. The heteroatom can be oxygen and can be substituted at the 3-position. Advantages include versatility, synthetic control, and good thermal stability. Different device designs can be used	Shawn P. Williams, Darin Laird, Troy D. Hammond	PLX-0002.790	Netherlands	57983116	26-Sep-05		1805826	24-Mar-10	Issued	Plextronics	
other	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES AS THIN FILM CONDUCTORS IN DIODES WHICH ARE NOT LIGHT EMITTING OR PHOTOVOLTAIC	Regio-regular polythiophenes used in diodes which are not light emitting or photovoltaic. High quality, processable thin film polymer films can be made. The thin film can have a thickness of about 50 nm to about one micron, and the conductive thin film can be applied by spin casting, drop casting, screening, ink-jetting, transfer or roll coating. The polythiophenes can be homopolymers or copolymers. The regio-regular poly(3-substituted)thiophene) can be derivatized so that the 3-substituent is an alkyl, aryl, or alkyl/aryl moiety with a heteroatom substitution in either the .alpha.- or beta-portion of the 3-substituent	Shawn P. Williams, Troy D Hammond, Darin Laird	PLX-0003.100	United States of America	60628202	17-Nov-04	n/a	n/a	n/a	Expired	Plextronics	
other	HETEROATOMIC REGIOREGULAR POLY (3-SUBSTITUTED) THIOPHENES AS THIN FILM CONDUCTORS IN DIODES WHICH ARE NOT LIGHT EMITTING OR PHOTOVOLTAIC	Regio-regular polythiophenes used in diodes which are not light emitting or photovoltaic. High quality, processable thin film polymer films can be made. The thin film can have a thickness of about 50 nm to about one micron, and the conductive thin film can be applied by spin casting, drop casting, screening, ink-jetting, transfer or roll coating. The polythiophenes can be homopolymers or copolymers. The regio-regular poly(3-substituted)thiophene) can be derivatized so that the 3-substituent is an alkyl, aryl, or alkyl/aryl moiety with a heteroatom substitution in either the .alpha.- or beta-portion of the 3-substituent	Shawn P. Williams, Troy D Hammond, Darin Laird	PLX-0003.200	United States of America	11274918	16-Nov-05	US20060118901	7321133	22-Jan-08	Issued	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved.	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.100	United States of America	60651211	10-Feb-05	n/a	n/a	n/a	Expired	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.200	United States of America	11350271	9-Feb-06	US20060175582	7569159	4-Aug-09	Issued	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.500	PCT	PCTUS2006004446	9-Feb-06	WO2006086480	n/a	n/a	Expired	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.550	Republic of Korea	1020077020585	9-Feb-06				Pending	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.551	Republic of Korea	1020137007225	21-Mar-13				Pending	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P. Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.560	Japan	2007555192	9-Feb-06		4975648	20-Apr-12	Issued	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.570	Singapore	2007057835	9-Feb-06		134607	26-Feb-10	Issued	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.580	China	200680007564l	9-Feb-06				Pending	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.590	Malaysia	PI20060573	10-Feb-06		MY-140651-A	15-Jan-10	Issued	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.700	European Patent Office	67205005	9-Feb-06				Pending	Plextronics	
OLED	HOLE INJECTION/TRANSPORT LAYER COMPOSITIONS AND DEVICES	Compositions for use in HIL/HTL applications include intrinsically conductive polymer, planarizing agent, and dopant, which are soluble in non-aqueous solvents. Block copolymers of regioregular alkyl/alkoxy- and aryl-substituted polythiophenes can be used. The compositions can be formed into thin films. Excellent efficiency and lifetime stability can be achieved	Troy D. Hammond, Shawn P Williams, Elena E. Sheina, Darin Laird, Christopher Greco, Brian E. Woodworth	PLX-0004.900	Taiwan R.O.C	95104614	10-Feb-06				Allowed	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Shijun Jia, Caton C. Goodman, Trian Sarbu	PLX-0005.100	United States of America	60661934	16-Mar-05	n/a	n/a	n/a	Expired	Plextronics	
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Caton C. Goodman, Shijun Jia, Trian Sarbu	PLX-0005.200	United States of America	11376550	16-Mar-06	ABANDONED US20060237695	n/a	n/a	Abandoned	Plextronics	
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Shijun Jia, Caton C. Goodman, Trian Sarbu	PLX-0005.500	PCT	PCTUS2006009458	16-Mar-06	WO2006101953	n/a	n/a	Expired	Plextronics	
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Shijun Jia, Caton C. Goodman, Trian Sarbu	PLX-0005.550	Republic of Korea	1020077021182	16-Mar-06				Pending	Plextronics	
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Shijun Jia, Caton C. Goodman, Trian Sarbu	PLX-0005.560	Japan	2008502030	16-Mar-06				Pending	Plextronics	
OPV	COPOLYMERS OF SOLUBLE POLYTHIOPHENES WITH IMPROVED ELECTRONIC PERFORMANCE	Polythiophene copolymers having tunable work functions and oxidation voltage onset. The ratio of monomer can be varied to achieve the desired property for a particular application. One monomer can be unsubstituted thiophene. The copolymer microstructure can be random. Another monomer can be a 3-substituted thiophene such as 3-alkyl or a heteroatom substituted substituent. Heterojunction polymer photovoltaic cells can be fabricated with excellent voltage onset properties compared to devices having corresponding homopolymers	Shawn P. Williams, Darin Laird, Shijun Jia, Caton C. Goodman, Trian Sarbu	PLX-0005.700	European Patent Office	67385104	16-Mar-06		n/a	n/a	Abandoned	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Caton C. Goodman, Christopher Greco, Jaideep Rajput	PLX-0006.100	United States of America	60703890	1-Aug-05	n/a	n/a	n/a	Expired	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated	Shawn P. Williams, Darin Laird, Caton C. Goodman, Christopher Greco, Jaideep Rajput	PLX-0006.200	United States of America	11496024	31-Jul-06	US20070065590	7888427	15-Feb-11	Issued	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated	Shawn P. Williams, Darin Laird, Caton C. Goodman, Christopher Greco, Jaideep Rajput	PLX-0006.500	PCT	PCT2006029552	31-Jul-06	WO2007016403	n/a	n/a	Expired	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated	Shawn P. Williams, Darin Laird, Caton C. Goodman, Christopher Greco, Jaideep Rajput	PLX-0006.550	Republic of Korea	1020087002651	31-Jul-06				Pending	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated	Shawn P. Williams, Darin Laird, Caton C. Goodman, Christopher Greco, Jaideep Rajput	PLX-0006.560	Japan	2008525060	31-Jul-06				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.570	Singapore	200800109	31-Jul-08		139023	29-Oct-10	Issued	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.580	China	200880028282X	31-Jul-08				Pending	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.596	Malaysia	PI20083681	31-Jul-08				Pending	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.640	Hong Kong	91003532	14-Jun-09				Pending	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.700	European Patent Office	08004951	31-Jul-08				Pending	Plextronics	
other	SOLVENT SUPPRESSED DOPING OF REGIOREGULAR POLYTHIOPHENE	Latent doping is provided wherein a conducting polymer is mixed with a dopant in solution without the doping reaction occurring unless solvent is removed. Regioregular polythiophenes are a particularly important embodiment. A composition comprising (i) at least one polymer comprising conjugation in the polymer backbone, (ii) at least one dopant for the polymer, (iii) at least one solvent for the polymer and latent dopant, wherein the polymer, the latent dopant, and the solvent are formulated so that the latent dopant does not substantially dope the polymer when formulated, but does substantially react with the polymer when the solvent is removed. Formulation of the composition can comprise adjusting the order of mixing, the amounts of the components, and the temperature. Methods of formulating the compositions and methods of using the compositions are also provided. OLED, PLED, photovoltaic, and other organic electronic devices can be fabricated.	Shawn P. Williams, Darin Laird, Calvin C. Goodman, Christopher Green, Jaideep Rajput	PLX-0006.900	Taiwan R.O.C	97128151	1-Aug-08				Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.100	United States of America	60760386	20-Jan-06	n/a	n/a	n/a	Expired	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.200	United States of America	12161546	18-Jun-07	US20070155578			Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.500	PCT	PCTUS2007061245	18-Jun-07	WO2007/065502	n/a	n/a	Expired	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.550	Republic of Korea	1020087017624	18-Jun-07				Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.560	Japan	2008553361	18-Jun-07				Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.570	Singapore	200850134	18-Jun-07		144209	31-Mar-11	Issued	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.580	China	200780024964	18-Jun-07		ZL200780024964	16-Nov-11	Issued	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Green, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.590	Malaysia	PI20082692	18-Jun-07				Pending	Plextronics	

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other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Greco, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.640	Hong Kong	91046540	21-May-07				Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Greco, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.700	European Patent Office	77180982	18-Jan-07				Pending	Plextronics	
other	ELECTROSTATIC COATINGS AND ARTICLES COMPRISING POLYTHIOPHENES	Electrostatic dissipation coatings based on regioregular polythiophenes including blends and block copolymers. The compositions can be soluble in organic solvents. Excellent film formation, transparency, stability, and conductivity control can be achieved.	Christopher Greco, Brian E. Woodworth, Shawn P. Williams, Glenn Thompson	PLX-0007.900	Taiwan R.O.C.	96102112	19-Jan-07				Pending	Plextronics	
OPV	HIGH PERFORMANCE POLYMER PHOTOVOLTAICS	Compositions for use in solar cell active layers comprising regioregular polythiophene of relatively low molecular weight and n-type semiconductors. Narrow, low polydispersity is also important. Advantages include better efficiencies, better current density, more versatility, and better processability. Devices are fabricated including use of hole injection layers. Solvent selection, annealing, and molecular weight can be used to provide good performance. Fullerene derivatives can be used as n-type acceptors.	Darin Laird, Shawn P. Williams, Brian E. Woodworth, Shijun Jia	PLX-0008.100	United States of America	60776213	24-Feb-06	n/a	n/a	n/a	Expired	Plextronics	
OPV	HIGH PERFORMANCE POLYMER PHOTOVOLTAICS	Compositions for use in solar cell active layers comprising regioregular polythiophene of relatively low molecular weight and n-type semiconductors. Narrow, low polydispersity is also important. Advantages include better efficiencies, better current density, more versatility, and better processability. Devices are fabricated including use of hole injection layers. Solvent selection, annealing, and molecular weight can be used to provide good performance. Fullerene derivatives can be used as n-type acceptors.	Darin Laird, Shawn P. Williams, Brian E. Woodworth, Shijun Jia	PLX-0008.200	United States of America	12280131	23-Feb-07	abandoned prior to publication	n/a	n/a	Abandoned	Plextronics	
OPV	HIGH PERFORMANCE POLYMER PHOTOVOLTAICS	Compositions for use in solar cell active layers comprising regioregular polythiophene of relatively low molecular weight and n-type semiconductors. Narrow, low polydispersity is also important. Advantages include better efficiencies, better current density, more versatility, and better processability. Devices are fabricated including use of hole injection layers. Solvent selection, annealing, and molecular weight can be used to provide good performance. Fullerene derivatives can be used as n-type acceptors.	Darin Laird, Shawn P. Williams, Brian E. Woodworth, Shijun Jia	PLX-0008.500	PCT	PCTUS2007004591	23-Feb-07	WO2007100600	n/a	n/a	Expired	Plextronics	
OPV	HIGH PERFORMANCE POLYMER PHOTOVOLTAICS	Compositions for use in solar cell active layers comprising regioregular polythiophene of relatively low molecular weight and n-type semiconductors. Narrow, low polydispersity is also important. Advantages include better efficiencies, better current density, more versatility, and better processability. Devices are fabricated including use of hole injection layers. Solvent selection, annealing, and molecular weight can be used to provide good performance. Fullerene derivatives can be used as n-type acceptors.	Darin Laird, Shawn P. Williams, Brian E. Woodworth, Shijun Jia	PLX-0008.550	Republic of Korea	1020087023163	23-Feb-07		n/a	n/a	Abandoned	Plextronics	
OPV	HIGH PERFORMANCE POLYMER PHOTOVOLTAICS	Compositions for use in solar cell active layers comprising regioregular polythiophene of relatively low molecular weight and n-type semiconductors. Narrow, low polydispersity is also important. Advantages include better efficiencies, better current density, more versatility, and better processability. Devices are fabricated including use of hole injection layers. Solvent selection, annealing, and molecular weight can be used to provide good performance. Fullerene derivatives can be used as n-type acceptors.	Darin Laird, Shawn P. Williams, Brian E. Woodworth, Shijun Jia	PLX-0008.560	Japan	2008556418	23-Feb-07		n/a	n/a	Abandoned	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.100	United States of America	60832095	21-Jul-06	n/a	n/a	n/a	Expired	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.110	United States of America	60845172	18-Sep-06	n/a	n/a	n/a	Expired	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.200	United States of America	11826394	13-Jul-07	US20080248313	8017241	13-Sep-11	Issued	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.300	United States of America	13209210	12-Aug-11	US20120017852	08399604	19-Mar-13	Issued	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.301	United States of America	13768967	15-Mar-13				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.500	PCT	PCTUS2007015927	13-Jul-07	WO2008073149	n/a	n/a	Expired	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.540	Canada	2658181	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.550	Republic of Korea	1020097003476	13-Jul-07				Pending	Plextronics	

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OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.570	Singapore	200900401 1	13-Jul-07		149470	15-Aug-11	Issued	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.580	China	200780034724.6	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.590	Malaysia	PI20090255	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.600	Israel	196622	13-Jul-07		196622	5/29/2013	Issued	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.610	India	610KOLNP2009	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.640	Hong Kong	101008268	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.700	European Patent Office	78707221	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.701	European Patent Office	EP12005186721.02	13-Jul-07				Pending	Plextronics	
OLED	SULFONATION OF CONDUCTING POLYMERS AND OLED PHOTOVOLTAIC AND ESD DEVICES	Conducting polymer systems for hole injection or transport layer applications including a composition comprising: a water soluble or water dispersible regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The polythiophene can be water soluble, water dispersible, or water swellable. They can be self-doped. The organic substituent can be an alkoxy substituent, or an alkyl substituent. OLED, PLED, SMOLED, PV, and ESD applications can be used.	Venkataramanan Seshadri, Brian E. Woodworth, Christopher Greco, Darin Laird, Mathew Mathai	PLX-0009.900	Taiwan R.O.C.	96126688	20-Jul-07				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.100	United States of America	60812961	13-Jun-06	n/a	n/a	n/a	Expired	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.200	United States of America	11743587	2-May-07	US20100132782	8217260	10-Jul-12	Issued	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.210	United States of America	12040776	29-Feb-08	US20080319207			Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.220	United States of America	13526414	18-Jun-12	US20120318359			Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.230	United States of America	13860187	10-Apr-13				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.500	PCT	PCTUS2007010533	3-May-07	WO2008018931	n/a	n/a	Expired	Plextronics	Nano-C, Inc

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.540	Canada	2655135	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.550	Republic of Korea	1020097000567	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.560	Japan	2009515390	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.570	Singapore	2008090573	2-May-07		148466	30-Dec-11	Issued	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.580	China	2007800101577	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.581	China	CN2012105082101	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.590	Malaysia	PI20083053	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.600	Israel	195846	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.610	India	5094KOLNP2008	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.640	Hong Kong	101023704	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.700	European Patent Office	78357407	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.701	European Patent Office	120028162	2-May-07				Pending	Plextronics	Nano-C, Inc
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPRISING FULLERENES AND DERIVATIVES THEREOF	Photovoltaic cells comprising an active layer comprising, as p-type material, conjugated polymers such as polythiophene and regioregular polythiophene, and as n-type material at least one fullerene derivative. The fullerene derivative can be C60, C70, or C84. The fullerene also can be functionalized with indene groups. Improved efficiency can be achieved.	Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada, Darin Laird, Reza Stegamat	PLX-0010.900	Taiwan R.O.C.	96116908	11-May-07				Pending	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING ...	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.100	United States of America	61016420	21-Dec-07	n/a	n/a	n/a	Expired	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.200	United States of America	12340587	19-Dec-08	US20090176994			Pending	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING ...	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.500	PCT	PCTUS2008087850	19-Dec-08	WO2009086210	n/a	n/a	Expired	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING ...	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.550	Republic of Korea	1020107013642	19-Dec-08				Pending	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.560	Japan	2010539914	19-Dec-08				Pending	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING ...	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.700	European Patent Office	88664883	19-Dec-08				Pending	Plextronics	Nano-C, Inc
OPV	OPVS COMPRISING FULLERENES AND DERIVATIVES THEREOF AND IMPROVED METHODS OF MAKING ...	Improved methods of fullerene derivative production including use of less solvent, or elimination of solvent, as well as use of shorter reaction times and higher reaction temperatures. Methods useful for production of bis-, tris-, tetra-, penta-, and hexa-fullerene derivatives. Indene is a preferred derivative. The derivatives used in active layers for solar cell applications	Darin Laird, Henning Richter, Viktor Vejins, Larry Scott, Thomas A. Lada	PLX-0011.900	Taiwan R.O.C.	97149955	19-Dec-08				Pending	Plextronics	Nano-C, Inc
OPV	SOLAR FARMS HAVING ULTRA-LOW COST OPV MODULES	Solar farms comprising solar panels and solar cells having limited efficiencies and lifetimes, but which are low cost and easily replaceable. Organic photoactive layers can be used including low molecular weight organic compounds and polymeric organic compounds including conducting polymers. Polythiophenes and regioregular polythiophenes are a preferred embodiment for the photoactive layer and can be coupled with fullerene compounds. Cost modeling can be carried out to prove the economic profitability of the solar farm. Levelized cost of energy can be calculated.	Troy D. Hammond	PLX-0012.100	United States of America	60848363	2-Oct-06	n/a	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	SOLAR FARMS HAVING ULTRA-LOW COST OPV MODULES	Solar farms comprising solar panels and solar cells having limited efficiencies and lifetimes, but which are low cost and easily replaceable. Organic photoactive layers can be used including low molecular weight organic compounds and polymeric organic compounds including conducting polymers. Polythiophenes and regioregular polythiophenes are a preferred embodiment for the photoactive layer and can be coupled with fullerene compounds. Cost modeling can be carried out to prove the economic profitability of the solar farm. Levelized cost of energy can be calculated.	Troy D. Hammond	PLX-0012.200	United States of America	11865625	1-Oct-07	ABANDONED US2008078437	n/a	n/a	Abandoned	Plextronics	
OPV	SOLAR FARMS HAVING ULTRA-LOW COST OPV MODULES	Solar farms comprising solar panels and solar cells having limited efficiencies and lifetimes, but which are low cost and easily replaceable. Organic photoactive layers can be used including low molecular weight organic compounds and polymeric organic compounds including conducting polymers. Polythiophenes and regioregular polythiophenes are a preferred embodiment for the photoactive layer and can be coupled with fullerene compounds. Cost modeling can be carried out to prove the economic profitability of the solar farm. Levelized cost of energy can be calculated.	Troy D. Hammond	PLX-0012.500	PCT	PCT2007080119	1-Oct-07	WO2008042871	n/a	n/a	Expired	Plextronics	
OPV	SOLAR FARMS HAVING ULTRA-LOW COST OPV MODULES	Solar farms comprising solar panels and solar cells having limited efficiencies and lifetimes, but which are low cost and easily replaceable. Organic photoactive layers can be used including low molecular weight organic compounds and polymeric organic compounds including conducting polymers. Polythiophenes and regioregular polythiophenes are a preferred embodiment for the photoactive layer and can be coupled with fullerene compounds. Cost modeling can be carried out to prove the economic profitability of the solar farm. Levelized cost of energy can be calculated.	Troy D. Hammond	PLX-0012.550	Republic of Korea	1020097009269	1-Oct-07		n/a	n/a	Abandoned	Plextronics	
OPV	SOLAR FARMS HAVING ULTRA-LOW COST OPV MODULES	Solar farms comprising solar panels and solar cells having limited efficiencies and lifetimes, but which are low cost and easily replaceable. Organic photoactive layers can be used including low molecular weight organic compounds and polymeric organic compounds including conducting polymers. Polythiophenes and regioregular polythiophenes are a preferred embodiment for the photoactive layer and can be coupled with fullerene compounds. Cost modeling can be carried out to prove the economic profitability of the solar farm. Levelized cost of energy can be calculated.	Troy D. Hammond	PLX-0012.700	European Patent Office	78537248	1-Oct-07		n/a	n/a	Abandoned	Plextronics	
OPV	QUANTUM DOT PHOTOVOLTAIC DEVICE	Nanostructures and quantum dots are used in photovoltaic cells or solar cells outside of the active layer to improve efficiency and other solar cell properties. In particular, organic photovoltaic cells can benefit. The quantum dot can absorb light which is not absorbed by the active layer and emit red-shifted light which is absorbed by the active layer. The active layer, the hole transport layer, or the hole injection layer can comprise regioregular polythiophenes. Quantum dots can form a quantum dot layer, and the quantum dot layer can be found between the light source and the active layer or on the side of the active layer opposite the light source. Quantum dots can also be used in electrode layers.	Troy D. Hammond	PLX-0013.100	United States of America	60879041	8-Jan-07	n/a	n/a	n/a	Expired	Plextronics	
OPV	QUANTUM DOT PHOTOVOLTAIC DEVICE	Nanostructures and quantum dots are used in photovoltaic cells or solar cells outside of the active layer to improve efficiency and other solar cell properties. In particular, organic photovoltaic cells can benefit. The quantum dot can absorb light which is not absorbed by the active layer and emit red-shifted light which is absorbed by the active layer. The active layer, the hole transport layer, or the hole injection layer can comprise regioregular polythiophenes. Quantum dots can form a quantum dot layer, and the quantum dot layer can be found between the light source and the active layer or on the side of the active layer opposite the light source. Quantum dots can also be used in electrode layers.	Troy D. Hammond	PLX-0013.110	United States of America	60880004	12-Jan-07	n/a	n/a	n/a	Expired	Plextronics	
OPV	QUANTUM DOT PHOTOVOLTAIC DEVICE	Nanostructures and quantum dots are used in photovoltaic cells or solar cells outside of the active layer to improve efficiency and other solar cell properties. In particular, organic photovoltaic cells can benefit. The quantum dot can absorb light which is not absorbed by the active layer and emit red-shifted light which is absorbed by the active layer. The active layer, the hole transport layer, or the hole injection layer can comprise regioregular polythiophenes. Quantum dots can form a quantum dot layer, and the quantum dot layer can be found between the light source and the active layer or on the side of the active layer opposite the light source. Quantum dots can also be used in electrode layers.	Troy D. Hammond	PLX-0013.200	United States of America	11970485	7-Jan-08	ABANDONED US2008216894	n/a	n/a	Abandoned	Plextronics	
OPV	QUANTUM DOT PHOTOVOLTAIC DEVICE	Nanostructures and quantum dots are used in photovoltaic cells or solar cells outside of the active layer to improve efficiency and other solar cell properties. In particular, organic photovoltaic cells can benefit. The quantum dot can absorb light which is not absorbed by the active layer and emit red-shifted light which is absorbed by the active layer. The active layer, the hole transport layer, or the hole injection layer can comprise regioregular polythiophenes. Quantum dots can form a quantum dot layer, and the quantum dot layer can be found between the light source and the active layer or on the side of the active layer opposite the light source. Quantum dots can also be used in electrode layers.	Troy D. Hammond	PLX-0013.500	PCT	PCTUS2008000183	7-Jan-08	WO2008085933	n/a	n/a	Expired	Plextronics	
OPV	QUANTUM DOT PHOTOVOLTAIC DEVICE	Nanostructures and quantum dots are used in photovoltaic cells or solar cells outside of the active layer to improve efficiency and other solar cell properties. In particular, organic photovoltaic cells can benefit. The quantum dot can absorb light which is not absorbed by the active layer and emit red-shifted light which is absorbed by the active layer. The active layer, the hole transport layer, or the hole injection layer can comprise regioregular polythiophenes. Quantum dots can form a quantum dot layer, and the quantum dot layer can be found between the light source and the active layer or on the side of the active layer opposite the light source. Quantum dots can also be used in electrode layers.	Troy D. Hammond	PLX-0013.700	European Patent Office	87130233	7-Jan-08		n/a	n/a	Abandoned	Plextronics	
OPV	SOLVENT BLENDS IN ACTIVE LAYER CONDUCTING POLYMER TECHNOLOGY FOR PRINTED ELECTRONIC DEVICES	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors.	Elena E. Sheina, Darin Laird, Caton C Goodman	PLX-0014.100	United States of America	60915632	2-May-07	n/a	n/a	n/a	Expired	Plextronics	
OPV	SOLVENT BLENDS IN ACTIVE LAYER CONDUCTING POLYMER TECHNOLOGY FOR PRINTED ELECTRONIC DEVICES	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors.	Elena E. Sheina, Darin Laird, Caton C Goodman	PLX-0014.200	United States of America	12113058	30-Apr-08	ABANDONED US2008299293	n/a	n/a	Abandoned	Plextronics	
OPV	SOLVENT SYSTEM FOR CONJUGATED POLYMERS	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors.	Elena E. Sheina, Darin Laird, Caton C. Goodman	PLX-0014.500	PCT	PCTUS2008062077	30-Apr-08	WO2008137468	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	SOLVENT BLENDS IN ACTIVE LAYER CONDUCTING POLYMER TECHNOLOGY FOR PRINTED ELECTRONIC DEVICES	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors.	Elena E. Sheina, Darin Laird, Caton C. Goodman	PLX-0014.550	Republic of Korea	1020097020328	30-Apr-08				Pending	Plextronics	
OPV	SOLVENT BLENDS IN ACTIVE LAYER CONDUCTING POLYMER TECHNOLOGY FOR PRINTED ELECTRONIC DEVICES	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors.	Elena E. Sheina, Darin Laird, Caton C. Goodman	PLX-0014.560	Japan	2010506614	30-Apr-08		n/a	n/a	Abandoned	Plextronics	
OPV	SOLVENT BLENDS IN ACTIVE LAYER CONDUCTING POLYMER TECHNOLOGY FOR PRINTED ELECTRONIC DEVICES	A solvent system for a conjugated polymer that includes at least two different solvents, at least one first solvent and at least one second solvent wherein the second solvent comprises a heterocyclic ring to improve the characteristics of materials made therefrom. Use of the solvent system to improve the electronic and/or optoelectronic characteristics of materials that include conjugated polymers, such as polythiophenes, optionally including n-acceptors, which are cast from a composition that includes the solvent system. In some embodiments the improved characteristics include higher absorption of solar radiation, increased current densities and higher power conversion efficiencies. As a result, materials made with the present solvent systems are well-suited for use in a variety of electronic devices including, photovoltaic cells, light emitting diodes, and transistors	Elena E. Sheina, Darin Laird, Caton C. Goodman	PLX-0014.700	European Patent Office	87472296	30-Apr-08		n/a	n/a	Abandoned	Plextronics	
OPV	ARYL-SUBSTITUTED CONJUGATED POLYMERS	Aryl-substituted conjugated polymers are described having improved properties. The polymers include a polymer backbone that includes heterocyclic repeat units. At least some of the heterocyclic repeat units have an aryl substituent attached thereto and at least some of these aryl substituents have a branched alkyl substituent attached thereto. The conjugated polymer are well-suited for use in a variety of electonic devices, including photovoltaic cells, light-emitting diodes, and transistors. Tunability of material, spectroscopic, and/or electronic properties is possible.	Elena E. Sheina, Darin Laird	PLX-0015.100	United States of America	60938166	15-May-07	n/a	n/a	n/a	Expired	Plextronics	
OPV	MIXED HALOGEN POLYMERIZATION	Synthesis of regioregular thiophene-based polymers (PTs) and their functionalized counterparts via metal assisted cross-coupling polymerizations utilizing mixed halogen substituted aryl halide monomer precursors. The described method provides a means to control structural homogeneity and regioregularity and the electronic/spectroscopic properties of functionalized PTs, and leads to improved performance of organic semiconductor devices such as OPVs and/or OFETs. Asymmetrical monomers can be used	Darin Laird, Elena E. Sheina	PLX-0015.110	United States of America	61043063	7-Apr-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	ARYL-SUBSTITUTED CONJUGATED POLYMERS	Aryl-substituted conjugated polymers are described having improved properties. The polymers include a polymer backbone that includes heterocyclic repeat units. At least some of the heterocyclic repeat units have an aryl substituent attached thereto and at least some of these aryl substituents have a branched alkyl substituent attached thereto. The conjugated polymer are well-suited for use in a variety of electronic devices, including photovoltaic cells, light-emitting diodes, and transistors. Tunability of material, spectroscopic, and/or electronic properties is possible.	Elena E. Sheina, Darin Laird	PLX-0015.200	United States of America	12153181	14-May-08	ABANDONED - US20080315751	n/a	n/a	Abandoned	Plextronics	
OPV	MIXED HALOGEN POLYMERIZATION	Synthesis of regioregular thiophene-based polymers (PTs) and their functionalized counterparts via metal assisted cross-coupling polymerizations utilizing mixed halogen substituted aryl halide monomer precursors. The described method provides a means to control structural homogeneity and regioregularity and the electronic/spectroscopic properties of functionalized PTs, and leads to improved performance of organic semiconductor devices such as OPVs and/or OFETs. Asymmetrical monomers can be used	Darin Laird, Elena E. Sheina	PLX-0015.210	United States of America	12153180	14-May-08	US20090066233	7838623	23-Nov-10	Issued	Plextronics	
OPV	ARYL-SUBSTITUTED CONJUGATED POLYMERS	Aryl-substituted conjugated polymers are described having improved properties. The polymers include a polymer backbone that includes heterocyclic repeat units. At least some of the heterocyclic repeat units have an aryl substituent attached thereto and at least some of these aryl substituents have a branched alkyl substituent attached thereto. The conjugated polymer are well-suited for use in a variety of electronic devices, including photovoltaic cells, light-emitting diodes, and transistors. Tunability of material, spectroscopic, and/or electronic properties is possible.	Elena E. Sheina, Darin Laird	PLX-0015.500	PCT	PCTUS2008006099	14-May-08	WO2008143838	n/a	n/a	Expired	Plextronics	
OPV	MIXED HALOGEN POLYMERIZATION	Synthesis of regioregular thiophene-based polymers (PTs) and their functionalized counterparts via metal assisted cross-coupling polymerizations utilizing mixed halogen substituted aryl halide monomer precursors. The described method provides a means to control structural homogeneity and regioregularity and the electronic/spectroscopic properties of functionalized PTs, and leads to improved performance of organic semiconductor devices such as OPVs and/or OFETs. Asymmetrical monomers can be used.	Darin Laird, Elena E. Sheina	PLX-0015.501	PCT	PCTUS2008006117	14-May-08	WO2008143850	n/a	n/a	Expired	Plextronics	
OPV	ARYL-SUBSTITUTED CONJUGATED POLYMERS	Aryl-substituted conjugated polymers are described having improved properties. The polymers include a polymer backbone that includes heterocyclic repeat units. At least some of the heterocyclic repeat units have an aryl substituent attached thereto and at least some of these aryl substituents have a branched alkyl substituent attached thereto. The conjugated polymer are well-suited for use in a variety of electronic devices, including photovoltaic cells, light-emitting diodes, and transistors. Tunability of material, spectroscopic, and/or electronic properties is possible.	Elena E. Sheina, Darin Laird	PLX-0015.700	European Patent Office	87544037	14-May-08		n/a	n/a	Abandoned	Plextronics	
OPV	MIXED HALOGEN POLYMERIZATION	Synthesis of regioregular thiophene-based polymers (PTs) and their functionalized counterparts via metal assisted cross-coupling polymerizations utilizing mixed halogen substituted aryl halide monomer precursors. The described method provides a means to control structural homogeneity and regioregularity and the electronic/spectroscopic properties of functionalized PTs, and leads to improved performance of organic semiconductor devices such as OPVs and/or OFETs. Asymmetrical monomers can be used	Darin Laird, Elena E. Sheina	PLX-0015.701	European Patent Office	87676821	14-May-08		n/a	n/a	Abandoned	Plextronics	
OPV	ARYL-SUBSTITUTED CONJUGATED POLYMERS	Aryl-substituted conjugated polymers are described having improved properties. The polymers include a polymer backbone that includes heterocyclic repeat units. At least some of the heterocyclic repeat units have an aryl substituent attached thereto and at least some of these aryl substituents have a branched alkyl substituent attached thereto. The conjugated polymer are well-suited for use in a variety of electronic devices, including photovoltaic cells, light-emitting diodes, and transistors. Tunability of material, spectroscopic, and/or electronic properties is possible.	Elena E. Sheina, Darin Laird	PLX-0015.900	Taiwan R.O.C	97117753	14-May-08		n/a	n/a	Abandoned	Plextronics	
OPV	MIXED HALOGEN POLYMERIZATION	Synthesis of regioregular thiophene-based polymers (PTs) and their functionalized counterparts via metal assisted cross-coupling polymerizations utilizing mixed halogen substituted aryl halide monomer precursors. The described method provides a means to control structural homogeneity and regioregularity and the electronic/spectroscopic properties of functionalized PTs, and leads to improved performance of organic semiconductor devices such as OPVs and/or OFETs. Asymmetrical monomers can be used	Darin Laird, Elena E. Sheina	PLX-0015.901	Taiwan R.O.C	97117757	14-May-08		n/a	n/a	Abandoned	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.100	United States of America	60939340	21-May-07	n/a	n/a	n/a	Expired	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.200	United States of America	12124972	21-May-08	ABANDONED US20090023842	n/a	n/a	Abandoned	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.500	PCT	PCTUS2008064409	21-May-08	WO2008144750	n/a	n/a	Expired	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.550	Republic of Korea	1020097024176	21-May-08				Pending	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.560	Japan	2010509533	21-May-08		n/a	n/a	Abandoned	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.700	European Patent Office	87560777	21-May-08				Pending	Plextronics	
OPV	PORPHYRIN AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONIC DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers such as polythiophene for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. A composition comprising: at least one polymer comprising at least one porphyrinic macrocycle covalently linked to at least one conjugated polymer, wherein the porphyrinic macrocycle is metal-free is also presented. Inks can be formulated. Methods of making are provided.	Darin Laird, Shawn P. Williams, Elena E. Sheina, Jonathan S. Lindsey, Gregory N. Parson	PLX-0016.900	Taiwan R.O.C.	97118833	21-May-08		n/a	n/a	Abandoned	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A composition comprising: a thiophene or pyrrole comprising at least one substituent which is photoactive and releases an acidic molecule upon exposure to radiation. The thiophene or pyrrole can be, respectively, a polythiophene or a polypyrrole. The thiophene or pyrrole can be, respectively, a thiophene compound comprising one thiophene ring or a polypyrrole compound comprising one pyrrole ring. The acidic molecule can be a sulfonic acid. The substituent can comprise tosylate. The radiation can be UV-Vis radiation. Application included printed electronics and field effect transistors.	Darin Laird, Elena E. Sheina, Christopher T. Brown	PLX-0017.100	United States of America	60939354	21-May-07	n/a	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A composition comprising: a thiophene or pyrrole comprising at least one substituent which is photoactive and releases an acidic molecule upon exposure to radiation. The thiophene or pyrrole can be, respectively, a polythiophene or a polypyrrole. The thiophene or pyrrole can be, respectively, a thiophene compound comprising one thiophene ring or a polypyrrole compound comprising one pyrrole ring. The acidic molecule can be a sulfonic acid. The substituent can comprise tosylate. The radiation can be UV-Vis radiation. Application included printed electronics and field effect transistors.	Darin Laird, Elena E. Sheina, Christopher T. Brown	PLX-0017.500	PCT	PCTUS2008064420	21-May-08	WO2008144756	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain; at least one channel; at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one gate disposed on the gate insulator second side; wherein the source, the drain, or both comprise at least one polymer adsorbed to the source, drain, or both to minimize contact resistance between the source and the channel, the drain and the channel, or both. The polymer can comprise conjugated repeat units, can be a polythiopene, and also can be a regioregular polythiopene.	Darin Laird, Elena E. Sheina, Christopher T. Brown, Shawn P. Williams, Thomas Jackson	PLX-0018.100	United States of America	60939356	21-May-07	n/a	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain; at least one channel; at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one gate disposed on the gate insulator second side; wherein the source, the drain, or both comprise at least one polymer adsorbed to the source, drain, or both to minimize contact resistance between the source and the channel, the drain and the channel, or both. The polymer can comprise conjugated repeat units, can be a polythiopene, and also can be a regioregular polythiopene.	Darin Laird, Elena E. Sheina, Christopher T. Brown, Shawn P. Williams, Thomas Jackson	PLX-0018.500	PCT	PCTUS2008064424	21-May-08	WO2008144758	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain; at least one channel; at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one gate disposed on the gate insulator second side; wherein the gate does not substantially overlap with the source or the drain so as to minimize parasitic capacitance, the device further comprising a substrate to support the transistor. The transistor can be adapted for a bottom-gate configuration or a top-gate configuration. The transistor can be a field effect transistor, an organic field effect transistor, or a thin- film transistor. A polymer substrate can be used. Applications include printed electronics.	Jan Bernkopf, Mathew Mathai, Darin Laird, Christopher T. Brown	PLX-0019.100	United States of America	60939346	21-May-07	n/a	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEES
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain, at least one channel, at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one gate disposed on the gate insulator second side; wherein the gate does not substantially overlap with the source or the drain so as to minimize parasitic capacitance, the device further comprising a substrate to support the transistor. The transistor can be adapted for a bottom-gate configuration or a top-gate configuration. The transistor can be a field effect transistor, an organic field effect transistor, or a thin-film transistor. A polymer substrate can be used. Applications include printed electronics	Jan Bernkopf, Mathew Mathai, Darin Laird, Christopher T. Brown	PLX-0019.500	PCT	PCTUS2008064426	21-May-08	WO2008144759	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain, at least one channel; at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one first gate material disposed on the gate insulator second side, wherein the first gate material does not substantially overlap with the source or the drain so as to minimize parasitic capacitance, the transistor further comprises a second gate material disposed away from the second side so that the first gate material is between the gate insulator and the second gate material. The second gate material can comprise a metal. The second gate material can have a higher conductivity than the first gate material. The second gate material can substantially overlap with the source or the drain. The transistor can be adapted for a bottom-gate configuration or a top-gate configuration. Applications included printed electronics.	Mathew Mathai, Thomas Jackson	PLX-0020.100	United States of America	60939332	21-May-07	n/a	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: a transistor comprising: at least one source; at least one drain, at least one channel, at least one gate insulator comprising (i) a first surface defining a first side, and (ii) a second surface defining a second side and opposing the first surface and first side, wherein the source and the drain are disposed on the gate insulator first side; at least one first gate material disposed on the gate insulator second side; wherein the first gate material does not substantially overlap with the source or the drain so as to minimize parasitic capacitance, the transistor further comprises a second gate material disposed away from the second side so that the first gate material is between the gate insulator and the second gate material. The second gate material can comprise a metal. The second gate material can have a higher conductivity than the first gate material. The second gate material can substantially overlap with the source or the drain. The transistor can be adapted for a bottom-gate configuration or a top-gate configuration. Applications included printed electronics.	Mathew Mathai, Thomas Jackson	PLX-0020.500	PCT	PCTUS2008064431	21-May-08	WO2008144762	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: at least one electrode, and at least one organic semiconductor layer, and an interfacial coating disposed between the electrode and the organic semiconductor layer, the coating comprising a polymer comprising regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The device can be a field effect transistor	Jan Bernkopf	PLX-0021.100	United States of America	60960851	16-Oct-07	n/a	n/a	n/a	Expired	Plextronics	
other	ORGANIC ELECTRODES AND ELECTRONIC DEVICES	A device comprising: at least one electrode, and at least one organic semiconductor layer, and an interfacial coating disposed between the electrode and the organic semiconductor layer, the coating comprising a polymer comprising regioregular polythiophene comprising (i) at least one organic substituent, and (ii) at least one sulfonate substituent comprising sulfonate sulfur bonding directly to the polythiophene backbone. The device can be a field effect transistor	Jan Bernkopf	PLX-0021.500	PCT	PCTUS2008080046	15-Oct-08	WO2009052215	n/a	n/a	Expired	Plextronics	
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.100	United States of America	61029255	15-Feb-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.200	United States of America	12371556	13-Feb-09	US20110028644			Pending	Plextronics	
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.500	PCT	PCTUS2009034157	13-Feb-09	WO2009103030	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.550	Republic of Korea	1020107019208	13-Feb-09				Pending	Plextronics	
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.560	Japan	2010546943	13-Feb-09				Pending	Plextronics	
OPV	NOVEL COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a copolymer comprising DTP units for use in, for example, low band gap materials including uses in organic photovoltaic active layers. The band gap and other properties can be engineered by copolymerization methods including selection of monomer structure and ratio of monomer components. In addition, a dimer adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one DTP moiety compound covalently linked to one second monomer moiety comprising at least one non-DTP moiety or a different DTP moiety. The composition can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel alternating dithieno[3,2-b:2',3'-d]pyrrole (DTP)-based donor repeat unit copolymers were designed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs).	Elena E. Sheina	PLX-0022.700	European Patent Office	97095202	13-Feb-09				Pending	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Venkataramanan Seshadri, Christopher T. Brown	PLX-0023.100	United States of America	61032905	29-Feb-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.200	United States of America	12395327	27-Feb-09	US20100072462	8187501	29-May-12	Issued	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.210	United States of America	13456125	25-Apr-12	US20120277367			Pending	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.500	PCT	PCTUS2009035565	27-Feb-09	WO2009111339	n/a	n/a	Expired	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.550	Republic of Korea	1020107021565	5-Mar-09				Pending	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.560	Japan	2010548920	27-Feb-09				Pending	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.700	European Patent Office	97174775	27-Feb-09		2250207	4-Jan-12	Issued	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.720	Belgium	97174775	27-Feb-09		2250207	4-Jan-12	Issued	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.750	France	97174775	27-Feb-09		EP2250207	4-Jan-12	Issued	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.760	Germany	97174775	27-Feb-09		602009004539.3	4-Jan-12	Issued	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.770	United Kingdom	97174775	27-Feb-09		EP2250207	4-Jan-12	Issued	Plextronics	
OLED	PLANARIZING AGENTS AND DEVICES	Use of certain materials in hole injection layer and/or hole transport layer can improve operational lifetimes in organic devices. Polymers having fused aromatic side groups such as polyvinylnaphthol polymers can be used in conjunction with conjugated polymers. Inks can be formulated and cast as films in organic electronic devices including OLEDs, SMOLEDs, and PLEDs. One embodiment provides a composition comprising: at least one conjugated polymer, and at least one second polymer different from the conjugated polymer comprising at least one optionally substituted fused aromatic hydrocarbon side group. The substituent can be hydroxyl. Aqueous-based inks can be formulated.	Christopher T. Brown, Venkataramanan Seshadri	PLX-0023.790	Netherlands	97174775	27-Feb-09		EP2250207	4-Jan-12	Issued	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.100	United States of America	61034476	6-Mar-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.200	United States of America	12399006	5-Mar-09	US20090230361			Pending	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.500	PCT	PCTUS2009036249	5-Mar-09	WO2009111675	n/a	n/a	Expired	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.550	Republic of Korea	1020107021700	5-Mar-09				Pending	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.560	Japan	2010549899	5-Mar-09				Pending	Plextronics	
OLED	MODIFIED PLANARIZING AGENTS	A composition comprising: at least one conjugated polymer, at least one second polymer comprising repeat units represented by: (I) optionally, --[CH.sub.2--CH(Ph-OH)]-- and (II) --[CH.sub.2--CH(Ph-OR)]- wherein Ph is a phenyl ring and R comprises a fluorinated group, an alkyl group, an alkylsulfonic acid group, an alkylene oxide group, or a combination thereof. Other polymers can be used as second polymer including polymers comprising modified naphthol side groups. Used in hole injection and hole transport layers for organic electronic devices. Increased lifetime and better processability can be achieved. Versatility with useful OLED emitters can be achieved. Ink formulations can be adapted for ink jet printing. The conjugated polymer can be a polythiophene. Applications include OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Brian E. Woodworth, Edward Yang	PLX-0024.700	European Patent Office	97170062	5-Mar-09				Pending	Plextronics	
other	FIELD-INDUCED POLYMER DOPING		Christopher T. Brown, Jan Birnkopf, Shijun Jia	PLX-0025.100	United States of America	61043397	8-Apr-08	n/a	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
other	FIELD-INDUCED POLYMER DOPING		Christopher T. Brown, Jan Bernkopf, Shijun Jia	PLX-0025.110	United States of America	61168156	9-Apr-09	n/a	n/a	n/a	Expired	Plextronics	
other	FIELD INDUCED POLYMER DOPING		Christopher T. Brown, Jan Bernkopf, Shijun Jia	PLX-0025.120	United States of America	61323087	12-Apr-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	HOLE COLLECTION LAYER COMPOSITIONS AND PHOTOVOLTAIC DEVICES		Shawn P. Williams, Brian E. Woodworth, Darin Laird	PLX-0026.100	United States of America	61043654	9-Apr-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Jing Wang, Mathew Mathai	PLX-0027.100	United States of America	61044380	11-Apr-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Jing Wang, Mathew Mathai, Edward Yang	PLX-0027.110	United States of America	61119239	2-Dec-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.200	United States of America	12422159	10-Apr-09	US20090256117A1			Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.500	PCT	PCTUS2009040257	10-Apr-09	WO2009126918	n/a	n/a	Expired	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.540	Canada	2720694	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.550	Republic of Korea	1020107024707	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.560	Japan	2011504213	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.571	Singapore	2010072551	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.580	China	2009801211505	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.590	Malaysia	PI2010004662	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.600	Israel	208569	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.610	India	3706KOLNP2010	10-Apr-09				Pending	Plextronics	
OLED	DOPED CONJUGATED POLYMERS DEVICES AND METHODS OF MAKING THE SAME	Use of certain materials in hole injection or hole transport layers can improve the operational lifetimes in organic electronic devices. Compositions comprising a doped conjugated polymer, doped with a redox dopant, including iodonium salt, can increase lifetimes. Inks can be formulated and cast as films in organic electronic devices including OLEDs, PHOLEDs, and OPVs. One embodiment provides a composition with a conjugated polymer doped with a redox dopant. Non-aqueous based inks can be formulated. Iodonium salts can be used.	Venkataramanan Seshadri, Christopher T. Brown, Jessica Benson-Smith, Edward Yang	PLX-0027.700	European Patent Office	9730200.4	10-Apr-09				Pending	Plextronics	
OLED	SULFONATED POLYTHIOPHENES COMPRISING FUSED RING REPEAT UNITS	A sulfonated polymer comprising a 3-substituted fused thienothiophene repeat unit, a composition comprising the polymer, a method of making the polymer, and a device comprising the polymer. The polymers can be used in hole injection or hole transport layers, or other applications in organic electronic devices	Venkataramanan Seshadri	PLX-0028.100	United States of America	61060081	9-Jun-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	SULFONATED POLYTHIOPHENES COMPRISING FUSED RING REPEAT UNITS	A sulfonated polymer comprising a 3-substituted fused thienothiophene repeat unit, a composition comprising the polymer, a method of making the polymer, and a device comprising the polymer. The polymers can be used in hole injection or hole transport layers, or other applications in organic electronic devices	Venkataramanan Seshadri	PLX-0028.200	United States of America	12996766	7-Dec-10	US2011147725			Pending	Plextronics	
OLED	SULFONATED POLYTHIOPHENES COMPRISING FUSED RING REPEAT UNITS	A sulfonated polymer comprising a 3-substituted fused thienothiophene repeat unit, a composition comprising the polymer, a method of making the polymer, and a device comprising the polymer. The polymers can be used in hole injection or hole transport layers, or other applications in organic electronic devices	Venkataramanan Seshadri	PLX-0028.500	PCT	PCTUS2009046771	9-Jun-09	WO2009152165	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	SULFONATED POLYTHIOPHENES COMPRISING FUSED RING REPEAT UNITS	A sulfonated polymer comprising a 3-substituted fused thienothiophene repeat unit, a composition comprising the polymer, a method of making the polymer, and a device comprising the polymer. The polymers can be used in hole injection or hole transport layers, or other applications in organic electronic devices	Venkataramanan Seshadri	PLX-0028.700	European Patent Office	97634554	9-Jun-09				Pending	Plextronics	
OPV	ALUMINUM ENCAPSULATION OF OPV DEVICES	An organic optoelectronic device includes a substrate, an anode, a cathode, an active region comprising an organic material, an encapsulation that isolates the active region from an ambient environment, wherein the encapsulation comprises a housing, and a first hermetically sealed electrical path through the housing	Glenn Thompson	PLX-0029.100	United States of America	61060719	11-Jun-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	ALUMINUM ENCAPSULATION OF OPV DEVICES	An organic optoelectronic device includes a substrate, an anode, a cathode, an active region comprising an organic material, an encapsulation that isolates the active region from an ambient environment, wherein the encapsulation comprises a housing, and a first hermetically sealed electrical path through the housing	Glenn Thompson	PLX-0029.110	United States of America	61142118	31-Dec-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	ALUMINUM ENCAPSULATION OF OPV DEVICES	An organic optoelectronic device includes a substrate, an anode, a cathode, an active region comprising an organic material, an encapsulation that isolates the active region from an ambient environment, wherein the encapsulation comprises a housing, and a first hermetically sealed electrical path through the housing	Glenn Thompson	PLX-0029.200	United States of America	12482354	10-Jun-09	US20090321726	8362517	29-Jan-13	Issued	Plextronics	
OPV	ALUMINUM ENCAPSULATION OF OPV DEVICES	An organic optoelectronic device includes a substrate, an anode, a cathode, an active region comprising an organic material, an encapsulation that isolates the active region from an ambient environment, wherein the encapsulation comprises a housing, and a first hermetically sealed electrical path through the housing	Glenn Thompson	PLX-0029.300	United States of America	13734837	4-Jan-13				Pending	Plextronics	
OPV	ALUMINUM ENCAPSULATION OF OPV DEVICES	An organic optoelectronic device includes a substrate, an anode, a cathode, an active region comprising an organic material, an encapsulation that isolates the active region from an ambient environment, wherein the encapsulation comprises a housing, and a first hermetically sealed electrical path through the housing	Glenn Thompson	PLX-0029.500	PCT	PCTUS0946955	10-Jun-09	WO2009152275	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular poly-thiophene.	Mathew Mathai, Glenn Thompson, Mark Storch	PLX-0030.100	United States of America	61090150	19-Aug-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular poly-thiophene	Mathew Mathai, Glenn Thompson, Mark Storch, Troy D. Hammond	PLX-0030.200	United States of America	12543225	18-Aug-09	US20100045175	8414304	9-Apr-13	Issued	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular poly-thiophene.	Mathew Mathai, Glenn Thompson, Mark Storch, Troy D. Hammond	PLX-0030.300	United States of America	13850165	25-Mar-13					Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular poly-thiophene	Mathew Mathai, Glenn Thompson, Mark Storch, Troy D. Hammond	PLX-0030.500	PCT	PCTUS0954224	18-Aug-09	WO2010022101	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular polythiophene.	Mathew Mathai, Glenn Thompson, Mark Storch, Troy D. Hammond	PLX-0030.700	European Patent Office	97916332	18-Aug-09				Pending	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING DEVICES	An organic light emitting diode (OLED) device includes a substrate, an anode, a cathode, an active region including an organic material, wherein the active region is electrically coupled to the anode and the cathode, at least one coupler configured to electrically couple at least one of the anode or the cathode to a power supply, and an encapsulation that isolates the active region from an ambient environment. A lighting system can be made including a plurality of OLED devices. A lighting system can be assembled using the OLED devices from a kit. The OLED devices may be polymer light emitting diode (PLED) devices or small molecule light emitting diode (SMOLED) devices. The OLED devices can use regioregular polythiophene.	Mathew Mathai, Glenn Thompson, Mark Storch, Troy D. Hammond	PLX-0030.900	Taiwan R.O.C.	98127795	18-Aug-09				Pending	Plextronics	
OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lesser amounts but can improve efficiency in cells	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.100	United States of America	61090464	20-Aug-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lesser amounts but can improve efficiency in cells	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.200	United States of America	12541500	14-Aug-09	US20100043876			Pending	Plextronics	
OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lesser amounts but can improve efficiency in cells.	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.500	PCT	PCTUS2009053833	14-Aug-09	WO2010021921	n/a	n/a	Expired	Plextronics	
OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lesser amounts but can improve efficiency in cells	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.550	Republic of Korea	1020107005618	14-Aug-09				Pending	Plextronics	

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OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lower amounts but can improve efficiency in cells	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.560	Japan	2011523885	14-Aug-09				Pending	Plextronics	
OPV	NON-HALOGENATED SOLVENT SYSTEM	Improved organic photovoltaic cells including a composition useful for forming an active layer which comprises (a) at least one p-type material, (b) at least one n-type material, (c) at least one first solvent and (d) at least one second solvent, wherein the first solvent is different from the second solvent, and the first solvent comprises at least one alkylbenzene or benzocyclohexane, and the second solvent comprises at least one carbocyclic compound. The second solvent can be used in lower amounts but can improve efficiency in cells	Richard Tuttle, Matthew Ladd Reitz, Brian E. Woodworth	PLX-0031.700	European Patent Office	97915235	14-Aug-09				Pending	Plextronics	
OLED/OPV	INTEGRATED ORGANIC PHOTOVOLTAIC AND LIGHT EMITTING DIODE DEVICE	An integrated organic photovoltaic and electroluminescent device includes an organic light emitting diode and an organic photovoltaic. The OLED and the OPV share a common substrate building layer	Troy D. Hammond	PLX-0032.100	United States of America	61097465	16-Sep-08	n/a	n/a	n/a	Expired	Plextronics	
OLED/OPV	INTEGRATED ORGANIC PHOTOVOLTAIC AND LIGHT EMITTING DIODE DEVICE	An integrated organic photovoltaic and electroluminescent device includes an organic light emitting diode and an organic photovoltaic. The OLED and the OPV share a common substrate building layer	Troy D. Hammond	PLX-0032.200	United States of America	12560306	15-Sep-09	ABANDONED US20100065834A1	n/a	n/a	Abandoned	Plextronics	
OLED/OPV	INTEGRATED ORGANIC PHOTOVOLTAIC AND LIGHT EMITTING DIODE DEVICE	An integrated organic photovoltaic and electroluminescent device includes an organic light emitting diode and an organic photovoltaic. The OLED and the OPV share a common substrate building layer	Troy D. Hammond	PLX-0032.500	PCT	PCTUS2009057030	15-Sep-09	WO2010033518	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE PRODUCTS	A plurality of organic light emitting diode (OLED) devices can be spatially distributed to form various lighting systems and luminaires. The lighting systems can be configured to readily replace conventional light bulbs or tubular fluorescent lamps. A networked lighting system including a plurality of OLED devices can have a variable light field based on a feedback.	Mathew Mathai, Mark Storch, Glenn Thompson, Eli J. Scott	PLX-0033.100	United States of America	61102330	2-Oct-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE PRODUCTS	A plurality of organic light emitting diode (OLED) devices can be spatially distributed to form various lighting systems and luminaires. The lighting systems can be configured to readily replace conventional light bulbs or tubular fluorescent lamps. A networked lighting system including a plurality of OLED devices can have a variable light field based on a feedback.	Mathew Mathai, Mark Storch, Glenn Thompson, Eli J. Scott, Lisa Pattison, Troy D. Hammond	PLX-0033.200	United States of America	12543442	18-Aug-09	US20100046210	8215787	10-Jul-12	Issued	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE PRODUCTS	A plurality of organic light emitting diode (OLED) devices can be spatially distributed to form various lighting systems and luminaires. The lighting systems can be configured to readily replace conventional light bulbs or tubular fluorescent lamps. A networked lighting system including a plurality of OLED devices can have a variable light field based on a feedback.	Mathew Mathai, Mark Storch, Glenn Thompson, Eli J. Scott, Lisa Pattison, Troy D. Hammond	PLX-0033.210	United States of America	13524875	15-Jun-12	US20120320574			Pending	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE PRODUCTS	A plurality of organic light emitting diode (OLED) devices can be spatially distributed to form various lighting systems and luminaires. The lighting systems can be configured to readily replace conventional light bulbs or tubular fluorescent lamps. A networked lighting system including a plurality of OLED devices can have a variable light field based on a feedback.	Mathew Mathai, Mark Storch, Glenn Thompson, Eli J. Scott, Lisa Pattison, Troy D. Hammond	PLX-0033.500	PCT	PCTUS0954232	18-Aug-09	WO2010022105	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING SYSTEMS	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifetime of the lighting system can be improved.	Mathew Mathai, Mark Storch, Glenn Thompson	PLX-0034.100	United States of America	61102326	2-Oct-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING SYSTEMS	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifetime of the lighting system can be improved.	Mark Storch, Mathew Mathai, Glenn Thompson	PLX-0034.200	United States of America	12543440	18-Aug-09	US20100045189	8288951	16-Oct-12	Issued	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING SYSTEMS	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifetime of the lighting system can be improved.	Mark Storch, Mathew Mathai, Glenn Thompson	PLX-0034.210	United States of America	13622953	19-Sep-12	expected to pub Mar			Pending	Plextronics	
OLED	ORGANIC LIGHT EMITTING DIODE LIGHTING SYSTEMS	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifetime of the lighting system can be improved.	Mark Storch, Mathew Mathai, Glenn Thompson	PLX-0034.500	PCT	PCTUS0954231	18-Aug-09	WO2010022104	n/a	n/a	Expired	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component.	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.100	United States of America	61108844	27-Oct-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.200	United States of America	12605768	26-Oct-09	US20120081070	8097876	17-Jan-12	Issued	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.210	United States of America	13753262	29-Jan-13				Pending	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component.	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.300	United States of America	13316324	9-Dec-11	US20120081070	8383454	26-Feb-13	Issued	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.500	PCT	PCTUS0962065	26-Oct-09	WO2010062558	n/a	n/a	Expired	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.550	Republic of Korea	1020117011519	26-Oct-09				Pending	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISIONG A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.560	Japan	2011533406	26-Oct-09				Pending	Plextronics	
OLED	CHARGE INJECTION AND TRANSPORTING LAYER COMPRISING A CONDUCTIVE POLYMER MIXED WITH A SEMICONDUCTING POLYMER FOR USE IN ELECTRONIC DEVICES	Compositions for use in hole transporting layers (HTLs) or hole injection layers (HILs) are provided, as well as methods of making the compositions and devices fabricated from the compositions. OLED devices can be made. The compositions comprise at least one conductive conjugated polymer, at least one semiconducting matrix component that is different from the conductive conjugated polymer, and an optional dopant, and are substantially free of an insulating matrix component.	Mathew Mathai, Christopher T. Brown, Venkataramanan Seshadri	PLX-0035.700	European Patent Office	97442891	26-Oct-09				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.100	United States of America	61108851	27-Oct-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.200	United States of America	12606162	26-Oct-09	US20100108751			Pending	Plextronics	
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.500	PCT	PCTUS2009062105	26-Oct-09	WO2010051259	n/a	n/a	Expired	Plextronics	
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.550	Republic of Korea	1020117009489	26-Oct-09				Pending	Plextronics	
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.560	Japan	2011533415	26-Oct-09				Pending	Plextronics	
OLED	POLYARYLAMINE KETONES AND ITS APPLICATIONS IN OPTOELECTRONICS DEVICES	Polymers comprising a backbone comprising at least one arylamine repeat moiety and at least one linking moiety, wherein the linking moiety does not comprise an aryl moiety. Ink formulations and organic electronic devices such as OLEDs or OPVs can be formed from the polymers and doped polymers. The polymers can be used in a hole injection layer, hole transport layer, a hole extraction layer, or as a host material in an emissive layer. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Christopher T. Brown, Jing Wang, Jessica Benson-Smith	PLX-0036.700	European Patent Office	97525786	26-Oct-09				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPROMISING ENDOHEDRAL METALLOFULLERENES AND DERIVTIVES THEREOF	Improved organic electronic devices, including, photovoltaic devices, including use of a composition comprising a mixture comprising: (i) at least one p-type material, (ii) at least one n-type material, wherein the n-type material comprises an endohedral metallofullerene derivative represented by: E*-(R)n, and solvates, salts, and mixtures thereof, wherein n is at least one, E* comprises an endohedral metallofullerene having a surface which comprises six-membered and five-membered rings; and R comprises at least one optionally substituted, unsaturated or saturated, carbocyclic or heterocyclic first ring, wherein the first ring directly bonds to the surface of the endohedral metallofullerene. Indenyl derivatization is a preferred embodiment.	Shawn P. Williams, Glenn Thompson	PLX-0037.100	United States of America	61115385	17-Nov-08	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC DEVICES COMPROMISING ENDOHEDRAL METALLOFULLERENES AND DERIVTIVES THEREOF	Improved organic electronic devices, including, photovoltaic devices, including use of a composition comprising a mixture comprising: (i) at least one p-type material, (ii) at least one n-type material, wherein the n-type material comprises an endohedral metallofullerene derivative represented by: E*-(R)n, and solvates, salts, and mixtures thereof, wherein n is at least one, E* comprises an endohedral metallofullerene having a surface which comprises six-membered and five-membered rings; and R comprises at least one optionally substituted, unsaturated or saturated, carbocyclic or heterocyclic first ring, wherein the first ring directly bonds to the surface of the endohedral metallofullerene. Indenyl derivatization is a preferred embodiment.	Shawn P. Williams, Glenn Thompson	PLX-0037.500	PCT	PCTUS2009064576	16-Nov-09	WO2010057087	n/a	n/a	Expired	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs	Venkataramanan Seshadri, Christopher T. Brown	PLX-0038.100	United States of America	61115877	18-Nov-08	n/a	n/a	n/a	Expired	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.200	United States of America	12620514	17-Nov-09	US20100292399	8283002	9-Oct-12	Issued	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.210	United States of America	13622732	18-Sep-12	expected to pub Mar			Pending	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.500	PCT	PCTUS0964857	17-Nov-09	WO2010059646	n/a	n/a	Expired	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.550	Republic of Korea	1020117010677	17-Nov-09				Pending	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs.	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.560	Japan	2011536609	17-Nov-09				Pending	Plextronics	
OLED	AMINOBENZENE COMPOSITIONS	Oligomers and/or polymers comprising a backbone comprising arylamine and fluorinated alkyleneoxy moieties which may be crosslinked. Ink formulations and devices can be formed from the oligomers or polymers, or corresponding monomers. Doped compositions can be formed. Charge injection and transport layers can be formed. Improved stability can be achieved in organic electronic devices such as OLEDs and OPVs	Venkataramanan Seshadri, Jing Wang, Christopher T. Brown	PLX-0038.700	European Patent Office	97641245	17-Nov-09				Pending	Plextronics	
OPV	DOPED ELECTRON TRANSPORT LAYERS FOR STABILITY ENHANCEMENT BULK HETEROJUNCTION ORGANIC SOLAR CELLS	Organic photovoltaic (OPV) devices comprising an organic semiconductor doped with a metal or organic dopant to form an interfacial modification layer, where the layer is disposed on an active layer including a conjugated polymer and a fullerene are described. In the layer, the organic semiconductor can be BPhen or TPBI, and the dopant can be a metal or an organic material. In the active layer, the conjugated polymer can be P3HT and the fullerene can be PCBM or indenyl-substituted fullerene. Improved OPV efficiency and lifetime can be achieved. Good testing results are obtained despite high humidity and high temperature, and modules can be made.	Jessica Benson-Smith, Mukund Dhar Dhar, Shijun Jia, Darin Laird, Christopher T. Brown	PLX-0039.100	United States of America	61116963	21-Nov-08	n/a	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	DOPED INTERFACIAL MODIFICATION LAYERS FOR STABILITY ENHANCEMENT FOR BULK HETEROJUNCTION ORGANIC SOLAR CELLS	Organic photovoltaic (OPV) devices comprising an organic semiconductor doped with a metal or organic dopant to form an interfacial modification layer, where the layer is disposed on an active layer including a conjugated polymer and a fullerene are described. In the layer, the organic semiconductor can be BPhen or TPBI, and the dopant can be a metal or an organic material. In the active layer, the conjugated polymer can be P3HT and the fullerene can be PCBM or indenyl-substituted fullerene. Improved OPV efficiency and lifetime can be achieved. Good testing results are obtained despite high humidity and high temperature, and modules can be made.	Jessica Benson-Smith, Christopher T. Brown, Mukund Dhar Dhar, Shijun Jia, Darin Laird, Christine L. McGuiness	PLX-0039.200	United States of America	12591509	20-Nov-09	ABANDONED US20110147586	n/a	n/a	Abandoned	Plextronics	
OPV	DOPED ELECTRON TRANSPORT LAYERS FOR STABILITY ENHANCEMENT BULK HETEROJUNCTION ORGANIC SOLAR CELLS	Organic photovoltaic (OPV) devices comprising an organic semiconductor doped with a metal or organic dopant to form an interfacial modification layer, where the layer is disposed on an active layer including a conjugated polymer and a fullerene are described. In the layer, the organic semiconductor can be BPhen or TPBI, and the dopant can be a metal or an organic material. In the active layer, the conjugated polymer can be P3HT and the fullerene can be PCBM or indenyl-substituted fullerene. Improved OPV efficiency and lifetime can be achieved. Good testing results are obtained despite high humidity and high temperature, and modules can be made	Jessica Benson-Smith, Darin Laird, Shijun Jia	PLX-0039.500	PCT	PCTUS2009006236	20-Nov-09	WO2010059240	n/a	n/a	Expired	Plextronics	
OPV	GLASS TUBE ENCAPSULATION FOR OPV		Glenn Thompson	PLX-0040.100	United States of America	61150675	6-Feb-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.100	United States of America	61142403	5-Jan-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik, Lisa Pattison	PLX-0041.110	United States of America	61167352	7-Apr-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.200	United States of America	12652359	5-Jan-10	US20100179469			Pending	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.500	PCT	PCTUS10020125	5-Jan-10	WO2010078581	n/a	n/a	Expired	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.550	Republic of Korea	1020117017880	29-Jul-11				Pending	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.560	Japan	2011544657	5-Jan-10				Pending	Plextronics	
OLED	OLED FOR TREATING JAUNDICE	A lighting system includes a plurality of organic light emitting diode (OLED) devices. By selecting the plurality of OLED devices, or by selectively controlling the plurality of OLED devices, the color characteristics of the lighting system can be tuned. The lifespan of the lighting system can be improved	Troy D. Hammond, Sujit Naik	PLX-0041.700	European Patent Office	107268435	5-Jan-10				Pending	Plextronics	
OLED	OLEDS FOR GROW LIGHTS		Troy D. Hammond, Sujit Naik, Lisa Pattison	PLX-0042.100	United States of America	61287122	16-Dec-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials.	Venkataramanan Seshadri, Edward Yang	PLX-0044.100	United States of America	61174828	1-May-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials.	Venkataramanan Seshadri, Edward Yang	PLX-0044.200	United States of America	13265521	30-Apr-10	US20120097898			Pending	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials	Venkataramanan Seshadri, Edward Yang	PLX-0044.500	PCT	PCTUS10033180	30-Apr-10	WO2010127251	n/a	n/a	Expired	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials	Venkataramanan Seshadri, Edward Yang	PLX-0044.550	Republic of Korea	1020117028618	30-Apr-10				Pending	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials	Venkataramanan Seshadri, Edward Yang	PLX-0044.560	Japan	2012508776	30-Apr-10				Pending	Plextronics	
OLED	REPLACING AQUEOUS WITH NON-AQUEOUS SOLVENT	Disclosed are methods of dispersing sulfonated polythiophenes in a non-aqueous solvent including replacing water for organic solvent without precipitation of the polythiophene. Once dispersed in a non-aqueous solvent, the sulfonated polythiophene can be mixed with a matrix polymer. The materials can be used in organic electronic devices including OLEDs and OPVs. The solvent processes can improve the viscosity properties. Sulfonated regioregular polythiophenes can be used. A benefit is improved solvent compatibility in building organic electronic devices and improved ability to formulate with matrix materials	Venkataramanan Seshadri, Edward Yang	PLX-0044.700	European Patent Office	107198319	30-Apr-10			-	Pending	Plextronics	
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.100	United States of America	61168470	10-Apr-09	n/a	n/a	n/a	Expired	Plextronics	
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.200	United States of America	12757814	9-Apr-10	US20100273007			Pending	Plextronics	
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.500	PCT	PCTUS1030601	9-Apr-10	WO2010118370	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.550	Republic of Korea	1020117026681	9-Apr-10				Pending	Plextronics	
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.560	Japan	2012504899	9-Apr-10				Pending	Plextronics	
other	DEHALOGENATION	Post-polymerization treatment including dehalogenation of polymeric materials including debromination of polythiophenes. The polymers can be used in organic electronic devices like OLEDs and OPVs. Improved lifetime and stability can result.	Elena E. Sheina	PLX-0045.700	European Patent Office	107141418	9-Apr-10				Pending	Plextronics	
OPV	OPV TESTING		Darin Laird, Shijun Jia, Srinivas Gowrisanker	PLX-0046.100	United States of America	61171059	20-Apr-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	OPV TESTING - GENERAL		Darin Laird, Shijun Jia, Srinivas Gowrisanker	PLX-0047.100	United States of America	61171069	20-Apr-09	n/a	n/a	n/a	Expired	Plextronics	
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.100	United States of America	61246913	29-Sep-09	n/a	n/a	n/a	Expired	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.200	United States of America	12890493	24-Sep-10	US20110095275	8431925	30-Apr-13	Issued	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.210	United States of America	13852939	28-Mar-13					Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems.	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.500	PCT	PCTUS2010050250	24-Sep-10	WO2011041232	n/a	n/a	Expired	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems.	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.550	Republic of Korea	1020127010175	24-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems.	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.560	Japan	2012-532215	24-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.570	Singapore	201202198-6	24-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.580	China	201080053397.0	24-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.640	Hong Kong	121004280	25-Sep-12				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems.	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.700	European Patent Office	107712341	24-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OLED/OPV	ORGANIC ELECTRONIC DEVICES, COMPOSITIONS, AND METHODS	Organic electronic devices, compositions, and methods are disclosed that employ electrically conductive nanowires and conducting materials such as conjugated polymers such as sulfonated regioregular polythiophenes which provide high device performance such as good solar cell efficiency. Devices requiring transparent conductors that are resilient to physical stresses can be fabricated, with reduced corrosion problems.	Brian E. Woodworth, Sergey B. Li, Shawn P. Williams, Pierre-Marc Allemand, Rimple Bhatia, Hash Pakbaz	PLX-0049.900	Taiwan R.O.C.	99132713	27-Sep-10				Pending	Plextronics	Cambrios Technologies Corp.
OPV	DYE AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONICS DEVICES	Compositions comprising dyes and conjugated polymers for use in organic electronic devices including solar cells are presented. Covalent linkage of a dye to a polymer or incorporation of a dye into a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the environmental stability and heat resistance of the system relative to a blended comparison. Compositions, devices, and methods are presented	Christopher T. Brown, Elena E. Sheina	PLX-0050.100	United States of America	61185132	8-Jun-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	DYE AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONICS DEVICES	Compositions comprising dyes and conjugated polymers for use in organic electronic devices including solar cells are presented. Covalent linkage of a dye to a polymer or incorporation of a dye into a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the environmental stability and heat resistance of the system relative to a blended comparison. Compositions, devices, and methods are presented	Christopher T. Brown, Elena E. Sheina, Christophe Rene Gaston Grenier	PLX-0050.500	PCT	PCTUS1037802	8-Jun-10	WO2010144162	n/a	n/a	Expired	Plextronics	
OPV	PORPHYRINS AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONICS DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer or incorporation of a porphyrinic macrocycle into a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. Compositions, devices, and methods are presented	Christopher T. Brown, Elena E. Sheina	PLX-0051.100	United States of America	61185133	8-Jun-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	PORPHYRINS AND CONDUCTIVE POLYMER COMPOSITIONS FOR USE IN SOLID-STATE ELECTRONICS DEVICES	Compositions comprising porphyrinic macrocycles and conjugated polymers for use in organic electronic devices including solar cells are presented. Covalent linkage of a porphyrinic macrocycle to a polymer or incorporation of a porphyrinic macrocycle into a polymer allows tuning of electronic and spectroscopic properties of conjugated polymers and can improve the heat stability of the system relative to a blended comparison. Compositions, devices, and methods are presented.	Christopher T. Brown, Elena E. Sheina	PLX-0051.500	PCT	PCTUS1037805	8-Jun-10	WO2010144472	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.100	United States of America	61222953	30-Jun-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.200	United States of America	12829121	30-Jun-10	US20110028644	8440785	5/14/2013	Issued	Plextronics	
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.500	PCT	PCTUS10040664	30-Jun-10	WO2011082547	n/a	n/a	Expired	Plextronics	
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.550	Republic of Korea	10201270022267	30-Jun-10				Pending	Plextronics	
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.560	Japan	2012518650	30-Jun-10				Pending	Plextronics	
OPV	NOVEL DONOR-ACCEPTOR COMPOSITIONS, METHODS, AND POLYMERS	A composition comprising a homopolymer or a copolymer comprising bithiophene units for use in, for example, low band gap materials including over in organic photovoltaic active layers. The band gap and other properties can be engineered by polymerization methods including selection of monomer structure and ratio of monomer components. In addition, a donor adapted for making alternating copolymers further comprising one first monomer moiety comprising at least one bithiophene moiety compound covalently linked to one second monomer moiety comprising a different bithiophene moiety or at least one moiety that is not a bithiophene. The components can be copolymerized to form an alternating copolymer that can be further processed to form a polymeric film used in a printed organic electronic device. A series of novel copolymers are disclosed that would allow fabrication of materials with tailor made electronic and/or mechanical properties that can be easily manipulated through molecular chemical structure and potentially result in long term stability under ambient conditions that can be advantageous for use in organic electronics (e.g., OPVs, OLEDs, OFETs). Improved methods are disclosed for making monomers comprising a benzo[2,1-b:3,4-b']dithiophene moiety that are useful as electronics materials.	Chad Landis, Elena E. Sheina, Christopher T. Brown	PLX-0053.700	European Patent Office	10730917.6	30-Jun-10				Pending	Plextronics	
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 3,4-dialkoxythiophene are disclosed that are useful as electronic materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. One of these materials is hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and miscibility in others, which is useful for the construction of multilayer materials for use in electronic devices.	Venkataramanan Seshadri, Elena E. Sheina	PLX-0054.100	United States of America	61287977	18-Dec-09	n/a	n/a	n/a	Expired	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 1,4-dialkoxythiophenes are disclosed that are useful as electronics materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. Use of these materials in hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and intractability in others, which is useful for the construction of multilayer materials for use in electronic devices.	Venkataramanan Seshadri, Elena E. Sheina	PLX-0056.200	United States of America	13516213	17-Dec-10	pub in Jan			Pending	Plextronics	
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 1,4-dialkoxythiophenes are disclosed that are useful as electronics materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. Use of these materials in hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and intractability in others, which is useful for the construction of multilayer materials for use in electronic devices.	Venkataramanan Seshadri, Elena E. Sheina	PLX-0056.500	PCT	PCTUS1061024	17-Dec-10	WO2011075644	n/a	n/a	Expired	Plextronics	
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 3,4-dialkoxythiophenes are disclosed that are useful as electronics materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. Use of these materials in hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and intractability in others, which is useful for the construction of multilayer materials for use in electronic devices.	Venkataramanan Seshadri, Elena E. Sheina	PLX-0056.550	Republic of Korea	1020127017874	17-Dec-10				Pending	Plextronics	
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 3,4-dialkoxythiophenes are disclosed that are useful as electronics materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. Use of these materials in hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and intractability in others, which is useful for the construction of multilayer materials for use in electronic devices	Venkataramanan Seshadri, Elena E. Sheina	PLX-0056.560	Japan	2012544894	17-Dec-10				Pending	Plextronics	
OLED	COPOLYMERS OF 3,4-DIALKOXYTHIOPHENES AND METHODS FOR MAKING AND DEVICES	Copolymers of 3,4-dialkoxythiophenes are disclosed that are useful as electronics materials. Also disclosed are methods of making these copolymers, as well as compositions and devices incorporating them. Use of these materials in hole injection or hole transport layers is disclosed. Materials comprising these copolymers can be designed to provide solubility in some solvents and intractability in others, which is useful for the construction of multilayer materials for use in electronic devices	Venkataramanan Seshadri, Elena E. Sheina	PLX-0056.700	European Patent Office	EP10796257З	17-Dec-10				Pending	Plextronics	
OLED	USER CONFIGURABLE MOSAIC LIGHT EMITTING APPARATUS	Mosaic devices including an apparatus includes at least one electroluminescence (EL) device and a system substrate. The at least one EL device can be configured to be coupled mechanically and electrically to the system substrate. The system substrate can be configured to receive the at least one EL device at a non-discrete location or orientation. The system substrate can be a smart system substrate configured to automatically identify a device type. The EL device can be an area-emitting device such as an organic light emitting diode (OLED) device	Troy D. Hammond, Lisa Pattison, Venkataramanan Seshadri	PLX-0066.100	United States of America	61222033	30-Jun-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	USER CONFIGURABLE MOSAIC LIGHT EMITTING APPARATUS	Mosaic devices including an apparatus includes at least one electroluminescence (EL) device and a system substrate. The at least one EL device can be configured to be coupled mechanically and electrically to the system substrate. The system substrate can be configured to receive the at least one EL device at a non-discrete location or orientation. The system substrate can be a smart system substrate configured to automatically identify a device type. The EL device can be an area-emitting device such as an organic light emitting diode (OLED) device	Troy D. Hammond, Lisa Pattison, Venkataramanan Seshadri	PLX-0066.200	United States of America	12543446	18-Aug-09	US2010076527	8519424	8/27/2013	Issued	Plextronics	
OLED	USER CONFIGURABLE MOSAIC LIGHT EMITTING APPARATUS	Mosaic devices including an apparatus includes at least one electroluminescence (EL) device and a system substrate. The at least one EL device can be configured to be coupled mechanically and electrically to the system substrate. The system substrate can be configured to receive the at least one EL device at a non-discrete location or orientation. The system substrate can be a smart system substrate configured to automatically identify a device type. The EL device can be an area-emitting device such as an organic light emitting diode (OLED) device	Troy D. Hammond, Lisa Pattison, Venkataramanan Seshadri	PLX-0066.500	PCT	PCTUS0954228	18-Aug-09	WO2010022102	n/a	n/a	Expired	Plextronics	
OLED	USER CONFIGURABLE MOSAIC LIGHT EMITTING APPARATUS	Mosaic devices including an apparatus includes at least one electroluminescence (EL) device and a system substrate. The at least one EL device can be configured to be coupled mechanically and electrically to the system substrate. The system substrate can be configured to receive the at least one EL device at a non-discrete location or orientation. The system substrate can be a smart system substrate configured to automatically identify a device type. The EL device can be an area-emitting device such as an organic light emitting diode (OLED) device	Troy D. Hammond, Lisa Pattison, Venkataramanan Seshadri	PLX-0066.900	Taiwan R.O.C.	98127797	18-Aug-09				Pending	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers compriseng, ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Sheina, Ting Xu	PLX-0068.100	United States of America	61241813	11-Sep-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects.	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Stheina, Ting Xu	PLX-0068.200	United States of America	12874137	1-Sep-10	US2011114184			Pending	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Sheina, Ting Xu	PLX-0068.500	PCT	PCTUS2010047567	1-Sep-10	WO2011028829	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Sheina, Ting Xu	PLX-0068.550	Republic of Korea	1020127007399	1-Sep-10				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects.	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Sheina, Ting Xu	PLX-0068.560	Japan	2012528015	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES AND POLYMERS, INCLUDING PHOTOVOLTAIC CELLS AND DIKETOPYRROLE-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## wherein A1 and A2 each independently comprise a fused ring system comprising at least two fused rings directly covalently linked to the pyrrole rings. Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects.	Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier, Elena E. Sheina, Ting Xu	PLX-0068.700	European Patent Office	107546194	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.100	United States of America	61240137	4-Sep-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.110	United States of America	61307387	23-Feb-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.200	United States of America	12874163	1-Sep-10	US2011204341			Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.500	PCT	PCTUS2010047565	1-Sep-10	WO2011028827	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.550	Republic of Korea	1020127007397	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.560	Japan	2012528014	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.580	China	201080049031.6	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.700	European Patent Office	107543845	1-Sep-10				Pending	Plextronics	
OPV	ORGANIC PHOTOVOLTAIC CELLS WITH DIOXOPYRROLO-BASED POLYMERS	Polymers which can be used in p-type materials for organic electronic devices and photovoltaic cells. Compounds, monomers, dimers, trimers, and polymers comprising: ##STR00001## Good photovoltaic efficiency and lifetime can be achieved. The R group can provide solubility, environmental stability, and fine tuning of spectroscopic and/or electronic properties. Different polymer microstructures can be prepared which encourage multiple band gaps and broad and strong absorptions. The carbonyl can interact with adjacent thiophene rings to provide backbone with rigidity, induce planarity, and reduce and/or eliminate intramolecular chain twisting defects. Polymers comprising benzodithiophene and/or benzothiadiazole structures can show particularly high performance.	Elena E. Sheina, Christopher T. Brown, Chad Landis, Christophe Rene Gaston Grenier	PLX-0079.900	Taiwan R.O.C.	99129543	3-Sep-10				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	DONOR ACCEPTOR ALTERNATING POLYMERS FOR SOLAR CELLS		Christopher T. Brown, Christophe Rene Gaston Grenier, Chad Landis, Sergey B. Li, Elena E. Sheina, Jessica Benson-Smith, Afia Gueye	PLX-0080.100	United States of America	61248335	2-Oct-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	VERTICALLY PHASE-SEPARATING SEMICONDUCTING ORGANIC MATERIAL LAYERS	Improved OLED devices and methods of making the same using vertical phase separation to simplify processing. Vertically phase separated material can include at least one lower first layer disposed on the electrode, and at least one upper second layer different from the first layer and disposed away from the electrode or optionally on one layer comprising at least one semiconducting organic material. The first layer can be enriched with at least one first semiconducting organic material (SOM 1) and the second layer can be enriched with at least one second semiconducting organic material (SOM 2) different from the SOM 1. The ink composition can be adapted so that the film vertically phase separates into the first and second layers. Compositions and devices are also embodied herein.	Christopher T. Brown, Neetu Chopra, Venkataramanan Seshadri, Jing Wang	PLX-0084.100	United States of America	61504653	5-Jul-11	n/a	n/a	n/a	Expired	Plextronics	
OLED	VERTICALLY PHASE-SEPARATING SEMICONDUCTING ORGANIC MATERIAL LAYERS	Improved OLED devices and methods of making the same using vertical phase separation to simplify processing. Vertically phase separated material can include at least one lower first layer disposed on the electrode, and at least one upper second layer different from the first layer and disposed away from the electrode or optionally on one layer comprising at least one semiconducting organic material. The first layer can be enriched with at least one first semiconducting organic material (SOM 1) and the second layer can be enriched with at least one second semiconducting organic material (SOM 2) different from the SOM 1. The ink composition can be adapted so that the film vertically phase separates into the first and second layers. Compositions and devices are also embodied herein.	Christopher T. Brown, Neetu Chopra, Venkataramanan Seshadri, Jing Wang	PLX-0084.200	United States of America	13539134	29-Jun-12	pub in Dec			Pending	Plextronics	
OLED	VERTICALLY PHASE-SEPARATING SEMICONDUCTING ORGANIC MATERIAL LAYERS	Improved OLED devices and methods of making the same using vertical phase separation to simplify processing. Vertically phase separated material can include at least one lower first layer disposed on the electrode, and at least one upper second layer different from the first layer and disposed away from the electrode or optionally on one layer comprising at least one semiconducting organic material. The first layer can be enriched with at least one first semiconducting organic material (SOM 1) and the second layer can be enriched with at least one second semiconducting organic material (SOM 2) different from the SOM 1. The ink composition can be adapted so that the film vertically phase separates into the first and second layers. Compositions and devices are also embodied herein.	Christopher T. Brown, Neetu Chopra, Venkataramanan Seshadri, Jing Wang	PLX-0084.500	PCT	PCTUS1245066	29-Jun-12	pub in Dec	n/a	n/a	Pending	Plextronics	
OPV	INK COMPOSITIONS COMPRISING FLUORINATED ADDITIVES		Christopher T. Brown, Christophe Rene Gaston Grenier, Afia Gueye, Chad Landis, Sergey B. Li, Elena E. Sheina	PLX-0085.100	United States of America	61289314	22-Dec-09	n/a	n/a	n/a	Expired	Plextronics	
OPV	INKS FOR SOLAR CELL INVERTED STRUCTURES	Compositions and devices comprising at least one conjugated polymer and at least one fluorosurfactant, providing improved wettability. Compositions can be applied to substrates and used in HTL layers in organic electronic devices such as inverted photovoltaic devices. The conjugated polymer can be a polythiophene. The fluorosurfactant can be a perfluorobutane sulfonate fluorosurfactant. Improved methods of making and using the HTL ink composition are provided	Caton C. Goodman, Edward Yang	PLX-0086.100	United States of America	61420299	6-Dec-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	INKS FOR SOLAR CELL INVERTED STRUCTURES	Compositions and devices comprising at least one conjugated polymer and at least one fluorosurfactant, providing improved wettability. Compositions can be applied to substrates and used in HTL layers in organic electronic devices such as inverted photovoltaic devices. The conjugated polymer can be a polythiophene. The fluorosurfactant can be a perfluorobutane sulfonate fluorosurfactant. Improved methods of making and using the HTL ink composition are provided	Caton C. Goodman, Edward Yang	PLX-0086.500	PCT	PCTUS2011063100	5-Dec-11	WO2012078517	n/a	n/a	Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.100	United States of America	61333657	11-May-10	n/a	n/a	n/a	Expired	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.110	United States of America	61446974	25-Feb-11	n/a	n/a	n/a	Expired	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.200	United States of America	13104598	10-May-11	US20110278559			Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.500	PCT	PCTUS1135897	10-May-11	WO2011143196	n/a	n/a	Expired	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.550	Republic of Korea	1020127031717	10-May-11				Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.560	Japan	Base PCT/US2011/035897	10-May-11				Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.580	China	201180022550S	10-May-11				Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.640	Hong Kong	131017656	7-Feb-13				Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.700	European Patent Office	117296888	10-May-11				Pending	Plextronics	
OLED	DOPING CONJUGATED POLYMERS AND DEVICES	Compositions comprising at least one hole transport material, such as a conjugated polymer, and at least one dopant, providing improved thermal stability. Compositions can be applied to substrates and used in HIL and HTL layers and organic electronic devices such as light emitting devices such as OLEDs or OPVs. The conjugated polymer can be a polythiophene, including a 3,4-substituted polythiophene or a regioregular polythiophene. The dopant can be a silver salt such as silver tetrakis(pentafluorophenyl)borate. Improved methods of making dopant are provided	Mark A. Bower, Christopher T. Brown, Venkataramanan Seshadri	PLX-0092.900	Taiwan R.O.C.	100116158	10-May-11				Pending	Plextronics	
OLED	DONOR ACCEPTOR POLYMERS FOR SOLAR APPLICATIONS		Jessica Benson-Smith, Christopher T Brown, Christophe Rene Gaston Grenier, Alfa Gurev, Chad Landis, Sergey B. Li, Elena E. Sheina	PLX-0076.100	United States of America	61290844	29-Dec-09	n/a	n/a	n/a	Expired	Plextronics	
OLED	HOLE TRANSPORT COMPOSITIONS AND RELATED DEVICES AND METHODS		Christopher T. Brown, Neetu Chopra, Mathew Mathai, Venkataramanan Seshadri, Jing Wang	PLX-0100.100	United States of America	61448579	2-Mar-11	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES, INCLUDING ORGANIC PHOTOVOLTAIC DEVICES, POLYMERS AND MONOMERS	Materials for organic electronic devices including organic photovoltaic devices. An oligomer or polymer comprising: ##STR00001## wherein R.sub.1, R.sub.2, R.sub.3, and R.sub.4 are independently hydrogen or solubilizing groups. Monomers and ink compositions can be also prepared. The materials can be used in an OPV active layer and show excellent absorption properties with bathochromic shift	Christophe Rene Gaston Grenier	PLX-0102.100	United States of America	61407419	27-Oct-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES, INCLUDING ORGANIC PHOTOVOLTAIC DEVICES, POLYMERS AND MONOMERS	Materials for organic electronic devices including organic photovoltaic devices. An oligomer or polymer comprising: ##STR00001## wherein R.sub.1, R.sub.2, R.sub.3, and R.sub.4 are independently hydrogen or solubilizing groups. Monomers and ink compositions can be also prepared. The materials can be used in an OPV active layer and show excellent absorption properties with bathochromic shift	Christophe Rene Gaston Grenier	PLX-0102.200	United States of America	13281023	25-Oct-11	US20120283377			Pending	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES, INCLUDING ORGANIC PHOTOVOLTAIC DEVICES, POLYMERS AND MONOMERS	Materials for organic electronic devices including organic photovoltaic devices. An oligomer or polymer comprising: ##STR00001## wherein R.sub.1, R.sub.2, R.sub.3, and R.sub.4 are independently hydrogen or solubilizing groups. Monomers and ink compositions can be also prepared. The materials can be used in an OPV active layer and show excellent absorption properties with bathochromic shift	Christophe Rene Gaston Grenier	PLX-0102.500	PCT	PCTUS11157662	25-Oct-11	WO2012058209	n/a	n/a	Pending	Plextronics	
OPV	ORGANIC ELECTRONIC DEVICES, INCLUDING ORGANIC PHOTOVOLTAIC DEVICES, POLYMERS AND MONOMERS	Materials for organic electronic devices including organic photovoltaic devices. An oligomer or polymer comprising: ##STR00001## wherein R.sub.1, R.sub.2, R.sub.3, and R.sub.4 are independently hydrogen or solubilizing groups. Monomers and ink compositions can be also prepared. The materials can be used in an OPV active layer and show excellent absorption properties with bathochromic shift	Christophe Rene Gaston Grenier	PLX-0102.700	European Patent Office	117822866	25-Oct-11		n/a	n/a	Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application	Christopher T. Brown, Jing Wang	PLX-0114.100	United States of America	61361147	2-Jul-10	n/a	n/a	n/a	Expired	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.200	United States of America	13175710	1-Jul-11	US2012001127			Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.210	United States of America	13175714	1-Jul-11	US2012003790			Allowed	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.220	United States of America	13868924	23-Apr-13	US2012003790			Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.500	PCT	PCTUS2011042865	1-Jul-11	WO2012003485	n/a	n/a	Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.501	PCT	PCTUS2011042861	1-Jul-11	WO2012003482	n/a	n/a	Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.550	Republic of Korea	1020137001889	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.551	Republic of Korea	1020137001890	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.560	Japan	Base PCT/US2011/042865	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.561	Japan	Base PCT/US2011/042861	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.581	China	Base PCT/US2011/042861	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.580	China	Base PCT/US2011/042865	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.790	European Patent Office	11743391.2	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Neetu Chopra, Christopher Robert Knittel, Mathew Mathai, Venkataramanan Seshadri, Jing Wang, Brian E. Woodworth	PLX-0114.791	European Patent Office	11743390.4	1-Jul-11				Pending	Plextronics	
OLED	SOLUTION-PROCESSIBLE HOLE TRANSPORT MATERIALS	A composition comprising: at least one compound comprising a hole transporting core, wherein the core is covalently bonded to a first arylamine group and also covalently bonded to a second arylamine group different from the first, and wherein the compound is covalently bonded to at least one intractability group, wherein the intractability group is covalently bonded to the hole transporting core, the first arylamine group, the second arylamine group, or a combination thereof, and wherein the compound has a molecular weight of about 5,000 g/mole or less. Blended mixtures of arylamine compounds, including fluorene core compounds, can provide good film formation and stability when coated onto hole injection layers. Solution processing of OLEDs is a particularly important application.	Christopher T. Brown, Jing Wang	PLX-0114.590	Taiwan R.O.C.	100123462	1-Jul-11				Pending	Plextronics	
OPV	PHOTOVOLTAIC DEVICES AND MATERIALS		Jessica Benson-Smith, Calon C. Goodman	PLX-0120.100	United States of America	61405086	20-Oct-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	FLUORO MONOMERS, OLIGOMERS, AND POLYMERS FOR INKS AND ORGANIC DEVICES	High performance organic photovoltaic cells based on donor acceptor polymers in the active layer. A composition comprising: at least one copolymer comprising at least one first donor moiety and at least one first acceptor moiety in the copolymer backbone, wherein the first acceptor moiety comprises at least one first ring which is bivalently linked to the copolymer backbone and at least one second ring fused to the first ring and not bivalently linked to the copolymer backbone, wherein the first ring or the second ring comprises two adjacent fluoro ring substituents, and optionally, wherein the donor comprises at least one fused ring system. High efficiency, high Voc, and a combination of both can be achieved	Christopher T. Brown, Elena E. Sheina, Ting Xu	PLX-0121.190	United States of America	61423571	15-Dec-10	n/a	n/a	n/a	Expired	Plextronics	
OPV	FLUORO MONOMERS, OLIGOMERS, AND POLYMERS FOR INKS AND ORGANIC DEVICES	High performance organic photovoltaic cells based on donor acceptor polymers in the active layer. A composition comprising: at least one copolymer comprising at least one first donor moiety and at least one first acceptor moiety in the copolymer backbone, wherein the first acceptor moiety comprises at least one first ring which is bivalently linked to the copolymer backbone and at least one second ring fused to the first ring and not bivalently linked to the copolymer backbone, wherein the first ring or the second ring comprises two adjacent fluoro ring substituents, and optionally, wherein the donor comprises at least one fused ring system. High efficiency, high Voc, and a combination of both can be achieved.	Christopher T. Brown, Elena E. Sheina, Ting Xu	PLX-0121.200	United States of America	13326027	14-Dec-11	US20120152357			Pending	Plextronics	

Core Tech	TITLE	ABSTRACT	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER	ADDITIONAL ASSIGNEE
OPV	FLUORO MONOMERS, OLIGOMERS, AND POLYMERS FOR INKS AND ORGANIC DEVICES	High performance organic photovoltaic cells based on donor acceptor polymers as the active layer. A composition comprising: at least one copolymer comprising at least one first donor moiety and at least one first acceptor moiety in the copolymer backbone, wherein the first acceptor moiety comprises at least one first ring which is bivalently linked to the copolymer backbone and at least one second ring fused to the first ring and not bivalently linked to the copolymer backbone, wherein the first ring or the second ring comprises two adjacent fluoro ring substituents, and optionally, wherein the donor comprises at least one fused ring system. High efficiency, high Voc, and a combination of both can be achieved	Christopher T. Brown, Elena E Sheina, Ting Xu	PLX-8121.500	PCT	PCTUS2116905	14-Dec-11	WO2012/082851	n/a	n/a	Pending	Plextronics	
OPV	FLUORO MONOMERS, OLIGOMERS, AND POLYMERS FOR INKS AND ORGANIC DEVICES	High performance organic photovoltaic cells based on donor acceptor polymers as the active layer. A composition comprising: at least one copolymer comprising at least one first donor moiety and at least one first acceptor moiety in the copolymer backbone, wherein the first acceptor moiety comprises at least one first ring which is bivalently linked to the copolymer backbone and at least one second ring fused to the first ring and not bivalently linked to the copolymer backbone, wherein the first ring or the second ring comprises two adjacent fluoro ring substituents, and optionally, wherein the donor comprises at least one fused ring system. High efficiency, high Voc, and a combination of both can be achieved	Christopher T. Brown, Elena E Sheina, Ting Xu	PLX-8121.700	European Patent Office	11858466	14-Dec-11		n/a	n/a	Pending	Plextronics	
OLED	IMPROVED DOPING METHODS FOR HOLE INJECTION/TRANSPORT		Venkateswaran Sethadri	PLX-8131.100	United States of America	61542868	4-Oct-11	n/a	n/a	n/a	Expired	Plextronics	
OLED	IMPROVED DOPING METHODS FOR HOLE INJECTION/TRANSPORT		Venkateswaran Sethadri, Neetu Chopra	PLX-8131.110	United States of America	61655419	4-Jun-12	n/a	n/a	n/a	Pending	Plextronics	
OLED	IMPROVED DOPING METHODS FOR HOLE INJECTION/TRANSPORT		Venkateswaran Sethadri, Neetu Chopra	PLX-8131.200	United States of America	61655419	5-Oct-12	pub in Apr			Pending	Plextronics	
OLED	IMPROVED DOPING METHODS FOR HOLE INJECTION/TRANSPORT		Venkateswaran Sethadri, Neetu Chopra	PLX-8131.500	PCT	PCTUS2012058443	3-Oct-12	pub in Apr	n/a	n/a	Pending	Plextronics	
OLED	IMPROVED DOPING METHODS FOR HOLE INJECTION/TRANSPORT		Venkateswaran Sethadri, Neetu Chopra	PLX-8131.900	Taiwan R.O.C.	101134563	5-Oct-12				Pending	Plextronics	
Battery	SYNTHESIS OF CONJUGATED POLYMERS VIA OXIDATIVE DEHYDROGENATIVE DIRECT COUPLING		Christopher T. Brown, Chad Landis, Venkateswaran Sethadri, Elena E. Sheina, Samuel M Mecra	PLX-8140.100	United States of America	61550922	21-Oct-11	n/a	n/a	n/a	Expired	Plextronics	
Battery	SYNTHESIS OF CONJUGATED POLYMERS VIA OXIDATIVE DEHYDROGENATIVE DIRECT COUPLING		Christopher T. Brown, Chad Landis, Venkateswaran Sethadri, Elena E. Sheina, Samuel M Mecra	PLX-8140.200	United States of America	13656561	19-Oct-12	pub in Apr			Pending	Plextronics	
Battery	SYNTHESIS OF CONJUGATED POLYMERS VIA OXIDATIVE DEHYDROGENATIVE DIRECT COUPLING		Christopher T. Brown, Chad Landis, Venkateswaran Sethadri, Elena E. Sheina, Samuel M Mecra	PLX-8140.500	PCT	PCTUS1261179	19-Oct-12	pub in Apr	n/a	n/a	Pending	Plextronics	
OLED	HOLE TRANSPORT MATERIALS INCLUDING OLED APPLICATIONS		Christopher T. Brown, Christophe Rene Claeton Chenier, Jing Wang	PLX-8154.100	United States of America	61647428	15-May-12	n/a	n/a	n/a	Pending	Plextronics	
OLED	HOLE TRANSPORT MATERIALS INCLUDING OLED APPLICATIONS		Christopher T. Brown, Christophe Rene Claeton Chenier, Jing Wang	PLX-8154.200	United States of America	13894412	14-May-13	n/a	n/a	n/a	Pending	Plextronics	
OLED	HOLE TRANSPORT MATERIALS INCLUDING OLED APPLICATIONS		Christopher T. Brown, Christophe Rene Claeton Chenier, Jing Wang	PLX-8154.500	PCT	PCTUS2134103	14-May-13	n/a	n/a	n/a	Pending	Plextronics	
OLED	ELECTROLUMINESCENT DEVICES COMPRISING INSULATOR-FREE METAL GRIDS		Sergey B. Li, Jian Wang, Hongmei Zheng	PLX-8162.100	United States of America	61697738	6-Sep-12	n/a	n/a	n/a	Pending	Plextronics	
OLED	ELECTROLUMINESCENT DEVICES COMPRISING INSULATOR-FREE METAL GRIDS		Sergey B. Li, Jian Wang, Hongmei Zheng	PLX-8162.100	United States of America	61839612	26-Jun-13	n/a	n/a	n/a	Pending	Plextronics	

Core Tech	TITLE	INVENTORS	DOCKET NUMBER	COUNTRY	APPLICATION NUMBER	APPLICATION DATE	Published Patent Application	PATENT NUMBER and link to patent pdf	GRANT DATE	STATUS	OWNER
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.200	United States of America		Mar 19, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.500	PCT	PCT/JP2010054786	Mar 19, 2010	WO2010110490			Expired	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.550	Republic of Korea		Mar 19, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.560	Japan	JP2010059499	Mar 16, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.570	Singapore		Mar 19, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.580	China		Mar 19, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.700	European Patent Office		Mar 19, 2010				Pending	Flextronics
PoC	ELECTROCONDUCTIVE COATING COMPOSITION AND PROCESS FOR PRODUCTION OF ELECTROCONDUCTIVE COATING FILM	Takeshi Otaka, Yoichi Kanda, Toru Miyajima	FLX-9301.900	Taiwan R.O.C.	99108270	Mar 22, 2010				Pending	Flextronics
LiB	BINDER FOR POSITIVE ELECTRODE OF LITHIUM ION SECONDARY BATTERY AND POSITIVE ELECTRODE MATERIAL	Takeshi Otaka, Bunpei Yoshida	FLX-9302.500	PCT	PCT/JP2010055570	Mar 9, 2010	WO2010113876			Pending	Flextronics
LiB	BINDER FOR POSITIVE ELECTRODE OF LITHIUM ION SECONDARY BATTERY AND POSITIVE ELECTRODE MATERIAL	Takeshi Otaka, Bunpei Yoshida	FLX-9302.550	Japan	JP20100069516	Mar 25, 2010				Pending	Flextronics
LiB	BINDER FOR POSITIVE ELECTRODE OF LITHIUM ION SECONDARY BATTERY AND POSITIVE ELECTRODE MATERIAL	Takeshi Otaka, Bunpei Yoshida	FLX-9302.900	Taiwan R.O.C.	TW201100514	Mar 29, 2010				Pending	Flextronics
PoC	CONDUCTIVE COMPOSITION AND METHOD FOR PRODUCING CONDUCTIVE COATING FILM	Takeshi Otaka, Hiroshi Fukumoto, Satoshi Yamashita, Yoichi Kanda	FLX-9303.500	PCT	PCT/JP2011/73812	Jan 17, 2011	WO2012093474			Pending	
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.200	United States of America	13978658	Jan 12, 2012				Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.500	PCT	PCT/JP2012050484	Jan 12, 2012		EP1028136		Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.550	Republic of Korea	1020137020189	Jul 30, 2013				Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.560	Japan	2011003864	Jan 12, 2011				Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.570	Singapore		Jan 12, 2012				Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.580	China		Jan 12, 2012				Pending	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.640	Hong Kong						Unfiled	Flextronics
LiB	ADDITIVE FOR POSITIVE ELECTRODES OF LITHIUM SECONDARY BATTERIES, AND POSITIVE ELECRODE FOR LITHIUM SECONDARY BATTERIES	Takeshi Otaka, Bunpei Yoshida,Atsushi Wakatsuki, Takuma Takeda	FLX-9304.700	European Patent Office		Jan 12, 2012				Pending	Flextronics
PoC	CONDUCTIVE POLYMER FOR SOLID ELECTROLYTE CAPACITOR	Yoichi Mori, Takuma Takeda, Yoshia Bunpei	FLX-9305.200	United States of America	13903864	May 28, 2013				Pending	Flextronics
PoC	CONDUCTIVE POLYMER FOR SOLID ELECTROLYTE CAPACITOR	Yoichi Mori, Takuma Takeda, Yoshia Bunpei	FLX-9305.500	PCT						Unfiled	Flextronics
PoC	CONDUCTIVE POLYMER FOR SOLID ELECTROLYTE CAPACITOR	Yoichi Mori, Takuma Takeda, Yoshia Bunpei	FLX-9305.560	Japan	2012121549	May 29, 2012				Pending	Flextronics
PoC	CONDUCTIVE POLYMER FOR SOLID ELECTROLYTE CAPACITOR	Yoichi Mori, Takuma Takeda, Yoshia Bunpei	FLX-9305.900	Taiwan R.O.C.						Unfiled	Flextronics