

RECORDATION FORM
TRADEMARK

09-23-1999

DEPARTMENT OF COMMERCE
Patent and Trademark Office



To the Honorable

Trademarks: P

101152027

Reprints or copy thereof.

1. Name of convey

09-20-1999

U.S. Patent & TMO/c/TM Mail Rcpt Dt. #54

Advanced Lighting
32000 Aurora Road
Solon, Ohio

MD 9-20-99

☐ Individual(s)
☐ General Partnership
☒ Corporation-State - Ohio
☐ Other

☐ Association
☐ Limited Partnership

Additional names(s) of conveying party(ies) ☐ Yes ☐ No

2. Name and address of receiving party(ies):

Name: PNC Bank, National Association, as agent

Internal Address:

Street Address: 1375 East 9th Street

City: Cleveland State: Ohio ZIP: 44114

☒ Individual(s) citizenship
☐ Association
☐ General Partnership
☐ Limited Partnership
☐ Corporation-State
☐ Other

If assignee is not domiciled in the United States, a domestic designation is ☐ Yes ☐ No
(Designations must be a separate document from
Additional name(s) & address(es) ☐ Yes ☐ No

3. Nature of conveyance:

☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other

Execution Date: May 21, 1999

4. Application number(s) or registration numbers(s):

A. Trademark Application No.(s)

B. Trademark Registration No.(s)

2,076,076

See attached Schedule A

Additional numbers

☒ Yes ☐ No

5. Name and address of party to whom correspondence concerning document should be mailed:

Name: Teresan Wasie Gilbert

Benesch, Friedlander, Coplan & Aronoff

Internal Address:

Street Address: 2300 BP America Building

200 Public Square

City: Cleveland State: OH ZIP: 44114

6. Total number of applications and registrations involved:

5

7. Total fee (37 CFR 3.41): \$ 140.00

☒ Enclosed

☐ Authorized to be charged to deposit account

8. Deposit account number:

02-2051

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

09/22/1999 NTHAI1 00000167 2076076

01 FC:481

40.00 OP

02 FC:482

100.00 OP

Teresan Wasie Gilbert

Name of Person Signing

Signature

Date

Total number of pages including cover sheet, attachments, and

17

SCHEDULE A

U.S. REGISTRATION NO.

2,081,960

2,089,963

2,091,689

2,163,889

TRADEMARK

REEL: 001963 FRAME: 0379

COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

RECITALS:

Concurrently herewith, ADVANCED LIGHTING TECHNOLOGIES, INC., an Ohio corporation ("Borrower"), is entering into a Credit Agreement with the financial institutions listed on Schedule 1 to the Credit Agreement (collectively, together with their respective successors and assigns, "Banks" and individually, "Bank") and PNC BANK, NATIONAL ASSOCIATION, as agent for the Banks ("Agent") (the "Credit Agreement"). DEPOSITION SCIENCES, INC., an Ohio corporation, ("Pledgor") desires that the Banks grant the financial accommodations described in the Credit Agreement to Borrower.

Pledgor deems it to be in the direct pecuniary, commercial and business interests of Pledgor that Borrower obtain from the Banks the Commitment, as defined in the Credit Agreement, and the Loans and Letters of Credit, as hereinafter defined, provided for in the Credit Agreement.

Pledgor understands that the Banks are willing to grant such financial accommodations to Borrower only upon certain terms and conditions, one of which is that Pledgor grant to Agent, for the benefit of the Banks, a security interest in and an assignment of the Collateral, as hereinafter defined, and this Agreement (as the same may from time to time be amended, restated or otherwise modified, this "Agreement") is being executed and delivered in consideration of each financial accommodation, if any, granted to Borrower by the Banks and for other valuable considerations.

Except as specifically defined herein, all capitalized terms used herein that are defined in the Credit Agreement shall have their respective meanings ascribed to them in the Credit Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Grant of Assignment and Security Interest. To secure Pledgor's guaranty of the Debt, as hereinafter defined, Pledgor hereby grants to Agent, for the benefit of the Banks, a security interest in, and assigns and conveys to Agent, for the benefit of the Banks, subject to Section 9 hereof, all of Pledgor's patents, patent applications, trademarks and all goodwill associated therewith, and trademark registrations, now owned and hereafter acquired, including, but not limited to, the patents, patent applications, trademark registrations, both federal and state, trademark applications, common law trademark rights, improvements, inventions, copyrights, and copyright registrations listed in Schedule A hereto and all goodwill associated therewith (as such Schedule A may be amended pursuant hereto from time to time, but only with the prior written consent of Agent), including, without limitation, all renewals thereof, all proceeds on infringement suits, the right to sue for past, present and future infringements and all rights corresponding thereto throughout the world, and the goodwill of the business to which each of the trademarks relate (all of the foregoing collectively

referred to herein as the "Collateral"). Schedule A is incorporated into and made a part of this Agreement by reference, the same as if it were fully set forth herein.

2. Obligations Secured. The obligations secured by this Agreement (collectively, the "Debt") for the payment and performance of, collectively, (a) any indebtedness arising under the Guaranty of Payment, as defined in the Credit Agreement, executed by Pledgor in favor of Agent of even date herewith; (b) each renewal, extension, consolidation or refinancing of any of the foregoing, in whole or in part; and (c) all interest from time to time accruing on any of the foregoing.

3. Warranties and Representations. Pledgor represents and warrants to Agent and the Banks that each of the following statements is true and complete:

(a) Pledgor owns the Collateral and, whether the same are registered or unregistered, no such Collateral has been adjudged invalid or unenforceable.

(b) The Collateral is valid and enforceable.

(c) Pledgor has no knowledge of any claim that the use of any of the Collateral does or may violate the rights of any third person.

(d) Except for the liens granted in this Agreement or permitted by the Credit Agreement, Pledgor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to the Collateral, free and clear of any liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements and covenants by Pledgor not to sue third persons.

(e) Pledgor has full power, authority and legal right to pledge the Collateral and enter into this Agreement and perform its terms.

(f) Pledgor has used, and will continue to use, for the duration of this Agreement, proper statutory notice in connection with its use of the Collateral, except where the failure to do so will not have a material adverse effect.

4. Right to Use. Unless and until there shall have occurred an Event of Default (as that term is defined in Section 8 of this Agreement), Agent, on behalf of the Banks, to the extent permitted by law, hereby grants to Pledgor the exclusive, royalty-free, world-wide, nontransferable right and license to use the Collateral, including without limitation the right to act in the normal course of business with respect to the protection, renewal, maintenance or perfection, on and in connection with products manufactured, distributed, or both by or in connection with products sold by Pledgor, for Pledgor's sole benefit and account and for none other. Pledgor shall not enter into any agreement that is inconsistent with Pledgor's obligations under this Agreement and shall not otherwise sell or assign its interest in, or grant any sublicense under, the license granted to Pledgor hereunder, except in the ordinary course of business, without Agent's prior written consent. Absent such prior written consent, any attempted sale or license is null and void.

5. Right to Inspect. Pledgor hereby grants to Agent and its employees and agents the right, during regular business hours and upon reasonable notice, to visit Pledgor's plants and facilities or the plants and facilities of any subcontractors that manufacture, inspect, sell or store products sold under any of the Collateral, and to inspect the products and quality control records relating thereto at reasonable times during regular business hours, at Pledgor's expense.

6. Standard Patent and Trademark Use. Pledgor shall not use the Collateral in any manner that would jeopardize the validity or legal status thereof. Pledgor shall comply with all patent marking requirements as specified in 35 U.S.C. §287. Pledgor shall further conform its usage of any trademarks to standard trademark usage, including, but not limited to, using the trademark symbols ®, ™, and SM where appropriate.

7. Event of Default.

(a) The occurrence of any of the following shall constitute an "Event of Default" under this Agreement:

(i) If an Event of Default, as defined in the Credit Agreement, shall occur under the Credit Agreement; or

(ii) If Pledgor shall fail to perform any obligation of Pledgor to be performed under this Agreement and the same shall not have been fully corrected within twenty (20) days after the giving of written notice thereof to Pledgor by Agent or any Bank.

(b) If any Event of Default shall have occurred, Pledgor irrevocably authorizes and empowers Agent, on behalf of the Banks, to terminate Pledgor's use of the Collateral and to exercise such rights and remedies as allowed by law. Without limiting the generality of the foregoing, Agent may immediately sell at public or private sale, in a commercially reasonable manner, or otherwise realize upon all or, from time to time, any of the Collateral together with the associated goodwill, or any interest that Pledgor may have therein, and, after deducting from the proceeds of sale or other disposition of the Collateral all reasonable expenses (including all expenses for attorneys' and brokers' fees and other legal services), Agent shall apply the residue of such proceeds against payment of the Debt. Any remainder of the proceeds, after payment in full of the Debt, shall be distributed in accordance with the Chapter 1309 of the Ohio Revised Code. Notice of any sale or other disposition of the Collateral shall be given to Pledgor at least five (5) business days before the time of any intended public or private sale or other disposition of the Collateral is to be made, which Pledgor hereby agrees shall be reasonable notice of such sale or other disposition. At any such sale or other disposition, Agent or any Bank may, to the extent permissible under applicable law, purchase the whole or any part of the Collateral sold, free from any right of redemption on the part of Pledgor, which right is hereby waived and released.

8. Termination. At such time as the Debt has been irrevocably paid in full, the Commitment, as defined in the Credit Agreement, terminated, and the Credit Agreement terminated and not replaced by any other credit facility with Agent and the Banks, this Agreement shall terminate and Agent shall execute and deliver to Pledgor all deeds, assignments, and other

instruments as may be necessary or proper to release Agent's security interest in and assignment of the Collateral and to re-vest in Pledgor full title to the Collateral, subject to any disposition thereof that may have been made by Agent pursuant hereto.

9. Maintaining Collateral, Attorneys' Fees, Costs and Expenses. Pledgor shall have the obligation and duty to perform all acts necessary to maintain or preserve the Collateral, provided that Pledgor shall not be obligated to maintain any Collateral in the event Pledgor determines, in the reasonable business judgment of Pledgor, that the maintenance of such Collateral is no longer necessary in Pledgor's business. Any and all reasonable fees, costs and expenses, of whatever kind or nature, including, without limitation, the attorneys' fees and legal expenses incurred by Agent and the Banks in connection with the amendment and enforcement of this Agreement, all renewals, required affidavits and all other documents relating hereto and the consummation of this transaction, the filing or recording of any documents (including all taxes in connection therewith) in public offices, the payment or discharge of any taxes, counsel fees, maintenance fees, encumbrances or otherwise protecting, maintaining or preserving the Collateral, or in defending or prosecuting any actions or proceedings arising out of or related to the Collateral, shall be borne and paid by Pledgor, upon demand by Agent, and, until so paid, shall be added to the principal amount of the Debt.

10. Pledgor's Obligations to Prosecute. Except as otherwise agreed to by Agent in writing, Pledgor shall have the duty to prosecute diligently any patent application or trademark application pending as of the date of this Agreement or thereafter until the Debt shall have been paid in full, to file and prosecute opposition and cancellation proceedings and to do any and all acts that are necessary or desirable to preserve and maintain all rights in the Collateral, including, but not limited to, payment of any maintenance fees. Any expenses incurred in connection with the Collateral shall be borne by Pledgor. Pledgor shall not abandon any Collateral without the prior written consent of Agent, unless such abandonment will not have a material adverse effect on Pledgor or such abandonment is in connection with the abandonment of a product or product line.

11. Agent's Rights to Enforce. Pledgor shall have the right to bring any opposition proceedings, cancellation proceedings or lawsuit in its own name to enforce or protect the Collateral. Agent and the Banks shall have the right, but shall have no obligation, to join in any such action. Pledgor shall promptly, upon demand, reimburse and indemnify Agent and the Banks for all damages, reasonable costs and expenses, including attorneys' fees incurred by Agent in connection with the provisions of this Section 11, in the event Agent and the Banks elect to join in any such action commenced by Pledgor.

12. Power of Attorney. Pledgor hereby authorizes and empowers Agent, on behalf of the Banks, to make, constitute and appoint any officer or agent of Agent as Agent may select, in its exclusive discretion, as Pledgor's true and lawful attorney-in-fact, with the power to endorse, after the occurrence of an Event of Default, Pledgor's name on all applications, documents, papers and instruments necessary for Agent to use the Collateral, or to grant or issue any exclusive or nonexclusive license under the Collateral to any third party, or necessary for Agent to assign, pledge, convey or otherwise transfer title in or dispose of the Collateral, together with associated goodwill to a third party or parties. Pledgor hereby ratifies all that such attorney shall lawfully do or cause

to be done by virtue hereof. This power of attorney shall be irrevocable for the life of this Agreement.

13. Agent's Right to Perform Obligations. If Pledgor fails to comply with any of its obligations under this Agreement, Agent, on behalf of the Banks, may, but is not obligated to, do so in Pledgor's name or in Agent's name, but at Pledgor's expense, and Pledgor hereby agrees to reimburse Agent on demand in full for all expenses, including attorneys' fees, incurred by Agent in protecting, defending and maintaining the Collateral.

14. Additional Documents. Pledgor shall, upon written request of Agent, enter into such additional documents or instruments as may be required by Agent in order to effectuate, evidence or perfect Agent's interests in the Collateral as evidenced by this Agreement.

15. New Collateral. If, before the Debt shall have been satisfied in full, Pledgor shall obtain rights to any new Collateral, the provisions of Section 1 shall automatically apply thereto as if the same were identified on Schedule A as of the date hereof and Pledgor shall give Agent prompt written notice thereof.

16. Modification for New Collateral. Pledgor hereby authorizes Agent to modify this Agreement by amending Schedule A to include any future Collateral as contemplated by Sections 1 and 16 hereof and, at Agent's request, Pledgor shall execute any documents or instruments required by Agent in order to modify this Agreement as provided in this Section 16, provided that any such modification to Schedule A shall be effective without the signature of Pledgor.

17. No Waiver. No course of dealing between Pledgor and Agent and the Banks, nor any failure to exercise, nor any delay in exercising, on the part of Agent or the Banks, any right, power or privilege hereunder, under any of the Loan Documents, or any other document executed in connection with any of the foregoing ("Documents") shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

18. **MAXIMUM LIABILITY OF PLEDGOR.**

18.1. Pledgor's Liability Limited in Amount. Subject to subsection 18.5 hereof, but otherwise notwithstanding anything to the contrary contained in this Agreement, the maximum amount of the Debt secured by this Agreement shall not exceed the sum of (a) that portion of the Loans and Letters of Credit the proceeds of which are used by Borrower to make Valuable Transfers (as hereinafter defined) to Pledgor, plus (b) ninety-five percent (95%) of the Adjusted Net Worth (as hereinafter defined), but only to the extent that the Adjusted Net Worth is a positive number, of Pledgor at the date of this Agreement.

18.2. Definition of Terms Used in Section 18. For purposes of this Section 18:

"Adjusted Net Worth" shall mean, as of any date of determination thereof, the excess of (a) the amount of the fair saleable value (or fair valuation, if relevant under applicable law) of the

assets of Pledgor as of the date of such determination, determined in accordance with applicable federal and state laws governing determinations of insolvency of debtors, over (b) the amount of all liabilities of Pledgor, contingent or otherwise, as of the date of such determination, determined in accordance with applicable federal and state law as referenced in the preceding clause (a), and in all events prior to giving effect to Valuable Transfers.

“Incurred Amount” shall mean the maximum amount for which Pledgor may be liable under this instrument (after giving effect to the incurring of the obligations under this instrument and to any rights to contribution of Pledgor from other affiliates of Borrower) without rendering the rights to payment hereunder of Agent void, voidable or avoidable under any applicable fraudulent transfer law.

“Valuable Transfer” shall mean (a) all loans, advances or capital contributions made to Pledgor with proceeds of the Loans and Letters of Credit; (b) the fair market value of all property acquired with proceeds of the Loans and Letters of Credit and transferred to Pledgor; (c) the interest on and the fees in respect of the Loans and the Letters of Credit, the proceeds of which are used to make such a Valuable Transfer; and (d) the value of any quantifiable economic benefits not included in clauses (a) through (c) above, but includable in accordance with applicable federal and state laws governing determinations of the insolvency of debtors, accruing to Pledgor as a result of the Loans and Letters of Credit.

18.3. Debt May Exceed Pledgor’s Maximum Liability. Pledgor agrees that the Debt may at any time and from time to time exceed the maximum amount of the Debt secured by this Agreement without impairing this Agreement or affecting the rights and remedies of Agent or the Banks hereunder.

18.4. Pledgor’s Liability Not Reduced by Payments by Others. No payment or payments made by Borrower, Pledgor or any other Person or received or collected by Agent or the Banks from Borrower, Pledgor or any other Person by virtue of any action or proceeding or any set-off or appropriation or application at any time or from time to time in reduction of or in payment of the Debt shall be deemed to modify, reduce, release or otherwise affect the amount of the Debt secured by this Agreement and this Agreement shall, notwithstanding any such payment or payments (other than payments made to Agent or the Banks by Pledgor or payments received or collected by Agent or the Banks from Pledgor), secure the Debt up to the maximum amount of the Debt secured by this Agreement as set forth above until the Debt is indefeasibly paid in full in cash.

18.5. Adjustments to Maximum Liability. Anything in this Section 18 to the contrary notwithstanding, in no event shall the amount of the Debt secured by this Agreement as set forth in subsections 18.1 through 18.4 hereof exceed the Incurred Amount; and further provided that, if a greater amount of the Debt than the maximum liability set forth in this Section 18 could be secured by Pledgor as a result of an increase in Pledgor’s Adjusted Net Worth subsequent to the date hereof, without rendering the rights to payment of Agent or the Banks hereunder void, voidable or avoidable under any applicable fraudulent transfer law, then the amount of Pledgor’s maximum liability calculated in subsection 18.1 hereof shall be calculated based upon Pledgor’s Adjusted Net Worth on such later date, rather than the date of execution of this Agreement.

19. Remedies Cumulative. All of the rights and remedies of Agent and the Banks with respect to the Collateral, whether established hereby or by the Documents, or by any other agreements or by law shall be cumulative and may be executed singularly or concurrently.

20. Severability. The provisions of this Agreement are severable, and, if any clause or provision shall be held invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Agreement in any jurisdiction.

21. Modifications. This Agreement may be amended or modified only by a writing signed by the parties hereto, except as provided in Section 16 above. In the event that any provision herein is deemed to be inconsistent with any provision of any other Documents (other than the Credit Agreement) relating to the Collateral, the provisions of this Agreement shall control.

22. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties, except that Pledgor may not assign any of its rights or duties hereunder without the prior written consent of Agent. Any attempted assignment or transfer without the prior written consent of Agent shall be null and void.

23. Notice. All notices, requests, demands and other communications provided for hereunder shall be in writing and, (a) if to Pledgor, mailed or delivered to it, addressed to it at the address specified on the signature page to this Agreement, (b) if to a Bank, mailed or delivered to it, addressed to the address of such Bank specified on the signature pages of the Credit Agreement, and (c) if to Agent, mailed or delivered to it, addressed to it at 2 PNC Plaza, 620 Liberty Avenue, 18th Floor, Pittsburgh, PA 15222, Attention: Richard Muse, Jr. All notices, statements, requests, demands and other communications provided for hereunder shall be deemed to be given or made when delivered by courier or forty-eight (48) hours after being deposited in the mails with postage prepaid by registered or certified mail, addressed as aforesaid, or sent by facsimile with telephonic confirmation of receipt, except that notices pursuant to any of the provisions hereof shall not be effective until received.

24. Governing Law/Jurisdiction. This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the State of Ohio, without regard to principles of conflicts of law. Pledgor hereby irrevocably submits to the non-exclusive jurisdiction of any Ohio state or federal court sitting in Cleveland, Ohio, over any action or proceeding arising out of or relating to this Agreement, any Loan Document or any Related Writing, and Pledgor hereby irrevocably agrees that all claims in respect of such action or proceeding may be heard and determined in such Ohio state or federal court. Pledgor hereby irrevocably waives, to the fullest extent permitted by law, any objection it may now or hereafter have to the laying of venue in any action or proceeding in any such court as well as any right it may now or hereafter have to remove such action or proceeding, once commenced, to another court on the grounds of FORUM NON CONVENIENS or otherwise. Pledgor agrees that a final, nonappealable judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

[Remainder of page intentionally left blank.]

25. JURY TRIAL WAIVER. PLEDGOR, AGENT AND THE BANKS, TO THE EXTENT PERMITTED BY LAW, EACH WAIVE ANY RIGHT TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE, AMONG AGENT, THE BANKS, AND PLEDGOR, OR ANY OF THEM, ARISING OUT OF, IN CONNECTION WITH, RELATED TO, OR INCIDENTAL TO THE RELATIONSHIP ESTABLISHED BETWEEN THEM IN CONNECTION WITH THIS AGREEMENT OR ANY NOTE OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION THEREWITH OR THE TRANSACTIONS RELATED THERETO. THIS WAIVER SHALL NOT IN ANY WAY AFFECT, WAIVE, LIMIT, AMEND OR MODIFY THE ABILITY OF ANY BANK TO PURSUE REMEDIES PURSUANT TO ANY CONFESSION OF JUDGMENT OR COGNOVIT PROVISION CONTAINED IN ANY NOTE, OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT AMONG PLEDGOR, BORROWER, AGENT AND THE BANKS, OR ANY OF THEM.

IN WITNESS WHEREOF, the undersigned has executed this Agreement as of the 21st day of May, 1999.

Address: 32000 Aurora Road
Solon, Ohio 44130

DEPOSITION SCIENCES, INC.

By: [Signature]
Title: Power of Attorney

PNC BANK, NATIONAL ASSOCIATION,
as Agent

By: [Signature]
Douglas K. Winget, Vice President

ACKNOWLEDGMENTS

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Nicholas R. Sucic, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said Deposition Sciences, Inc., an Ohio corporation, and that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.


GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


NOTARY PUBLIC
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Douglas K. Winget known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said PNC BANK, NATIONAL ASSOCIATION, a national banking association, and that he executed the same as the act of such national banking association for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


NOTARY PUBLIC
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

SCHEDULE A

May 21, 1999 11:07am -- JM5
CLE1: 249152 -- 359819 Ver9

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

SCHEDULE OF DEPOSITION SCIENCES, INC.'S PATENTS AND APPLICATIONS*

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	Patent 4,420,385	December 13, 1983
Deposition Sciences, Inc.	Method For Making Pigment Flakes	Patent 4,879,140	November 7, 1989
Deposition Sciences, Inc.	Photocell Array With Multi-spectral Filter	Patent 5,072,109	December 10, 1991
Deposition Sciences, Inc.	Method for Making Pigment Flakes	Patent 0 370 701B1 (Europe)	August 17, 1994
Deposition Sciences, Inc.	Multi-spectral Filter	Patent 5,164,858	November 17, 1992
Deposition Sciences, Inc.	Wear Resistant Transparent Dielectric Coatings	Patent 5,234,769	August 10, 1993
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	Patent 5,616,224	April 1, 1997
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96915638.9- 1215/0824604	May 8, 1996

* Unless otherwise indicated in () in the third column, the patent information on this chart is for US. patents.

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96-534243 (Japan)	May 8, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	Patent 5,714,009	February 3, 1998
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96906164.7/ PCT/US96/00399 (Patent Cooperative Treaty)	January 11, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96-521819 (Japan)	January 11, 1996
Deposition Sciences, Inc.	Sputtering Device And Method For Reactive Sputtering	Patent 5,849,162	December 15, 1998
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US94/06908	June 17, 1994
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US96/05589	April 23, 1996
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	Patent EPO 516 436 B1	January 16, 1997

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Sputtering Device	S.N. 94921324.3/ PCT/US94/06908 (Patent Cooperative Treaty)	June 17, 1994
Deposition Sciences, Inc.	Sputtering Device	S.N. 96913025.1/ PCT/US96/05589 (Patent Cooperative Treaty)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S.N. 96906309.8- 2203/0809719 (Europe)	December 3, 1997
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S. N. 96/524999 (Japan)	February 5, 1996
Deposition Sciences, Inc.	An Optical Interference Coating Capable of Withstanding Severe Temperature Environments	S.N. PCT/US97/21834 (Patent Cooperative Treaty)	November 26, 1997
Deposition Sciences, Inc.	Method for Making Pigment Flakes	S.N. 300954/89 (Japan)	November 21, 1989

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

DEPOSITION SCIENCES, INC.'S SCHEDULE OF MARKS*

REGISTERED OWNER	MARK	U.S. REGISTRATION NO.
Deposition Sciences, Inc.	EASS	Reg. 2,076,076
Deposition Sciences, Inc.	HEAT BUSTER	Reg. 2,081,960
Deposition Sciences, Inc.	PASSION FIRE	Reg. 2,089,963
Deposition Sciences, Inc.	MICRODYN	Reg. 2,091,689
Deposition Sciences, Inc.	TAVALITE	Reg. 2, 163,889

* Unless otherwise indicated in () in the third column, the trademark information in this chart is for U.S. trademarks.

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
DEPOSITION SCIENCES, INC.'S LICENSES

LICENSOR	LICENSEE	SUBJECT MATTER	DATE OF AGREEMENT	TERM OF AGREEMENT
Deposition Sciences, Inc.	Cardinal IG	License for R&D work using Microwave applicator	August 25, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Hankuk Glass	License for R&D work using Microwave applicator	February 22, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Iwasaki	MR16 lamp coating	April 15, 1992	April 15, 2002 or upon last patent expiration
Deposition Sciences, Inc.	PPG	Ophthalmic Electrooptical coatings	May 28, 1996	May 28, 2006
Deposition Sciences, Inc.	Sola	AR coating of plastic lenses	July 12, 1995	July 12, 2005 or upon last patent expiration

COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

RECITALS:

Concurrently herewith, ADVANCED LIGHTING TECHNOLOGIES, INC., an Ohio corporation ("Borrower"), is entering into a Credit Agreement with the financial institutions listed on Schedule 1 to the Credit Agreement (collectively, together with their respective successors and assigns, "Banks" and individually, "Bank") and PNC BANK, NATIONAL ASSOCIATION, as agent for the Banks ("Agent") (the "Credit Agreement"). DEPOSITION SCIENCES, INC., an Ohio corporation, ("Pledgor") desires that the Banks grant the financial accommodations described in the Credit Agreement to Borrower.

Pledgor deems it to be in the direct pecuniary, commercial and business interests of Pledgor that Borrower obtain from the Banks the Commitment, as defined in the Credit Agreement, and the Loans and Letters of Credit, as hereinafter defined, provided for in the Credit Agreement.

Pledgor understands that the Banks are willing to grant such financial accommodations to Borrower only upon certain terms and conditions, one of which is that Pledgor grant to Agent, for the benefit of the Banks, a security interest in and an assignment of the Collateral, as hereinafter defined, and this Agreement (as the same may from time to time be amended, restated or otherwise modified, this "Agreement") is being executed and delivered in consideration of each financial accommodation, if any, granted to Borrower by the Banks and for other valuable considerations.

Except as specifically defined herein, all capitalized terms used herein that are defined in the Credit Agreement shall have their respective meanings ascribed to them in the Credit Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Grant of Assignment and Security Interest. To secure Pledgor's guaranty of the Debt, as hereinafter defined, Pledgor hereby grants to Agent, for the benefit of the Banks, a security interest in, and assigns and conveys to Agent, for the benefit of the Banks, subject to Section 9 hereof, all of Pledgor's patents, patent applications, trademarks and all goodwill associated therewith, and trademark registrations, now owned and hereafter acquired, including, but not limited to, the patents, patent applications, trademark registrations, both federal and state, trademark applications, common law trademark rights, improvements, inventions, copyrights, and copyright registrations listed in Schedule A hereto and all goodwill associated therewith (as such Schedule A may be amended pursuant hereto from time to time, but only with the prior written consent of Agent), including, without limitation, all renewals thereof, all proceeds on infringement suits, the right to sue for past, present and future infringements and all rights corresponding thereto throughout the world, and the goodwill of the business to which each of the trademarks relate (all of the foregoing collectively

referred to herein as the "Collateral"). Schedule A is incorporated into and made a part of this Agreement by reference, the same as if it were fully set forth herein.

2. Obligations Secured. The obligations secured by this Agreement (collectively, the "Debt") for the payment and performance of, collectively, (a) any indebtedness arising under the Guaranty of Payment, as defined in the Credit Agreement, executed by Pledgor in favor of Agent of even date herewith; (b) each renewal, extension, consolidation or refinancing of any of the foregoing, in whole or in part; and (c) all interest from time to time accruing on any of the foregoing.

3. Warranties and Representations. Pledgor represents and warrants to Agent and the Banks that each of the following statements is true and complete:

(a) Pledgor owns the Collateral and, whether the same are registered or unregistered, no such Collateral has been adjudged invalid or unenforceable.

(b) The Collateral is valid and enforceable.

(c) Pledgor has no knowledge of any claim that the use of any of the Collateral does or may violate the rights of any third person.

(d) Except for the liens granted in this Agreement or permitted by the Credit Agreement, Pledgor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to the Collateral, free and clear of any liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements and covenants by Pledgor not to sue third persons.

(e) Pledgor has full power, authority and legal right to pledge the Collateral and enter into this Agreement and perform its terms.

(f) Pledgor has used, and will continue to use, for the duration of this Agreement, proper statutory notice in connection with its use of the Collateral, except where the failure to do so will not have a material adverse effect.

4. Right to Use. Unless and until there shall have occurred an Event of Default (as that term is defined in Section 8 of this Agreement), Agent, on behalf of the Banks, to the extent permitted by law, hereby grants to Pledgor the exclusive, royalty-free, world-wide, nontransferable right and license to use the Collateral, including without limitation the right to act in the normal course of business with respect to the protection, renewal, maintenance or perfection, on and in connection with products manufactured, distributed, or both by or in connection with products sold by Pledgor, for Pledgor's sole benefit and account and for none other. Pledgor shall not enter into any agreement that is inconsistent with Pledgor's obligations under this Agreement and shall not otherwise sell or assign its interest in, or grant any sublicense under, the license granted to Pledgor hereunder, except in the ordinary course of business, without Agent's prior written consent. Absent such prior written consent, any attempted sale or license is null and void.

5. Right to Inspect. Pledgor hereby grants to Agent and its employees and agents the right, during regular business hours and upon reasonable notice, to visit Pledgor's plants and facilities or the plants and facilities of any subcontractors that manufacture, inspect, sell or store products sold under any of the Collateral, and to inspect the products and quality control records relating thereto at reasonable times during regular business hours, at Pledgor's expense.

6. Standard Patent and Trademark Use. Pledgor shall not use the Collateral in any manner that would jeopardize the validity or legal status thereof. Pledgor shall comply with all patent marking requirements as specified in 35 U.S.C. §287. Pledgor shall further conform its usage of any trademarks to standard trademark usage, including, but not limited to, using the trademark symbols ®, ™, and ™ where appropriate.

7. Event of Default.

(a) The occurrence of any of the following shall constitute an "Event of Default" under this Agreement:

(i) If an Event of Default, as defined in the Credit Agreement, shall occur under the Credit Agreement; or

(ii) If Pledgor shall fail to perform any obligation of Pledgor to be performed under this Agreement and the same shall not have been fully corrected within twenty (20) days after the giving of written notice thereof to Pledgor by Agent or any Bank.

(b) If any Event of Default shall have occurred, Pledgor irrevocably authorizes and empowers Agent, on behalf of the Banks, to terminate Pledgor's use of the Collateral and to exercise such rights and remedies as allowed by law. Without limiting the generality of the foregoing, Agent may immediately sell at public or private sale, in a commercially reasonable manner, or otherwise realize upon all or, from time to time, any of the Collateral together with the associated goodwill, or any interest that Pledgor may have therein, and, after deducting from the proceeds of sale or other disposition of the Collateral all reasonable expenses (including all expenses for attorneys' and brokers' fees and other legal services), Agent shall apply the residue of such proceeds against payment of the Debt. Any remainder of the proceeds, after payment in full of the Debt, shall be distributed in accordance with the Chapter 1309 of the Ohio Revised Code. Notice of any sale or other disposition of the Collateral shall be given to Pledgor at least five (5) business days before the time of any intended public or private sale or other disposition of the Collateral is to be made, which Pledgor hereby agrees shall be reasonable notice of such sale or other disposition. At any such sale or other disposition, Agent or any Bank may, to the extent permissible under applicable law, purchase the whole or any part of the Collateral sold, free from any right of redemption on the part of Pledgor, which right is hereby waived and released.

8. Termination. At such time as the Debt has been irrevocably paid in full, the Commitment, as defined in the Credit Agreement, terminated, and the Credit Agreement terminated and not replaced by any other credit facility with Agent and the Banks, this Agreement shall terminate and Agent shall execute and deliver to Pledgor all deeds, assignments, and other

instruments as may be necessary or proper to release Agent's security interest in and assignment of the Collateral and to re-vest in Pledgor full title to the Collateral, subject to any disposition thereof that may have been made by Agent pursuant hereto.

9. Maintaining Collateral, Attorneys' Fees, Costs and Expenses. Pledgor shall have the obligation and duty to perform all acts necessary to maintain or preserve the Collateral, provided that Pledgor shall not be obligated to maintain any Collateral in the event Pledgor determines, in the reasonable business judgment of Pledgor, that the maintenance of such Collateral is no longer necessary in Pledgor's business. Any and all reasonable fees, costs and expenses, of whatever kind or nature, including, without limitation, the attorneys' fees and legal expenses incurred by Agent and the Banks in connection with the amendment and enforcement of this Agreement, all renewals, required affidavits and all other documents relating hereto and the consummation of this transaction, the filing or recording of any documents (including all taxes in connection therewith) in public offices, the payment or discharge of any taxes, counsel fees, maintenance fees, encumbrances or otherwise protecting, maintaining or preserving the Collateral, or in defending or prosecuting any actions or proceedings arising out of or related to the Collateral, shall be borne and paid by Pledgor, upon demand by Agent, and, until so paid, shall be added to the principal amount of the Debt.

10. Pledgor's Obligations to Prosecute. Except as otherwise agreed to by Agent in writing, Pledgor shall have the duty to prosecute diligently any patent application or trademark application pending as of the date of this Agreement or thereafter until the Debt shall have been paid in full, to file and prosecute opposition and cancellation proceedings and to do any and all acts that are necessary or desirable to preserve and maintain all rights in the Collateral, including, but not limited to, payment of any maintenance fees. Any expenses incurred in connection with the Collateral shall be borne by Pledgor. Pledgor shall not abandon any Collateral without the prior written consent of Agent, unless such abandonment will not have a material adverse effect on Pledgor or such abandonment is in connection with the abandonment of a product or product line.

11. Agent's Rights to Enforce. Pledgor shall have the right to bring any opposition proceedings, cancellation proceedings or lawsuit in its own name to enforce or protect the Collateral. Agent and the Banks shall have the right, but shall have no obligation, to join in any such action. Pledgor shall promptly, upon demand, reimburse and indemnify Agent and the Banks for all damages, reasonable costs and expenses, including attorneys' fees incurred by Agent in connection with the provisions of this Section 11, in the event Agent and the Banks elect to join in any such action commenced by Pledgor.

12. Power of Attorney. Pledgor hereby authorizes and empowers Agent, on behalf of the Banks, to make, constitute and appoint any officer or agent of Agent as Agent may select, in its exclusive discretion, as Pledgor's true and lawful attorney-in-fact, with the power to endorse, after the occurrence of an Event of Default, Pledgor's name on all applications, documents, papers and instruments necessary for Agent to use the Collateral, or to grant or issue any exclusive or nonexclusive license under the Collateral to any third party, or necessary for Agent to assign, pledge, convey or otherwise transfer title in or dispose of the Collateral, together with associated goodwill to a third party or parties. Pledgor hereby ratifies all that such attorney shall lawfully do or cause

to be done by virtue hereof. This power of attorney shall be irrevocable for the life of this Agreement.

13. Agent's Right to Perform Obligations. If Pledgor fails to comply with any of its obligations under this Agreement, Agent, on behalf of the Banks, may, but is not obligated to, do so in Pledgor's name or in Agent's name, but at Pledgor's expense, and Pledgor hereby agrees to reimburse Agent on demand in full for all expenses, including attorneys' fees, incurred by Agent in protecting, defending and maintaining the Collateral.

14. Additional Documents. Pledgor shall, upon written request of Agent, enter into such additional documents or instruments as may be required by Agent in order to effectuate, evidence or perfect Agent's interests in the Collateral as evidenced by this Agreement.

15. New Collateral. If, before the Debt shall have been satisfied in full, Pledgor shall obtain rights to any new Collateral, the provisions of Section 1 shall automatically apply thereto as if the same were identified on Schedule A as of the date hereof and Pledgor shall give Agent prompt written notice thereof.

16. Modification for New Collateral. Pledgor hereby authorizes Agent to modify this Agreement by amending Schedule A to include any future Collateral as contemplated by Sections 1 and 16 hereof and, at Agent's request, Pledgor shall execute any documents or instruments required by Agent in order to modify this Agreement as provided in this Section 16, provided that any such modification to Schedule A shall be effective without the signature of Pledgor.

17. No Waiver. No course of dealing between Pledgor and Agent and the Banks, nor any failure to exercise, nor any delay in exercising, on the part of Agent or the Banks, any right, power or privilege hereunder, under any of the Loan Documents, or any other document executed in connection with any of the foregoing ("Documents") shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

18. MAXIMUM LIABILITY OF PLEDGOR.

18.1. Pledgor's Liability Limited in Amount. Subject to subsection 18.5 hereof, but otherwise notwithstanding anything to the contrary contained in this Agreement, the maximum amount of the Debt secured by this Agreement shall not exceed the sum of (a) that portion of the Loans and Letters of Credit the proceeds of which are used by Borrower to make Valuable Transfers (as hereinafter defined) to Pledgor, plus (b) ninety-five percent (95%) of the Adjusted Net Worth (as hereinafter defined), but only to the extent that the Adjusted Net Worth is a positive number, of Pledgor at the date of this Agreement.

18.2. Definition of Terms Used in Section 18. For purposes of this Section 18:

"Adjusted Net Worth" shall mean, as of any date of determination thereof, the excess of (a) the amount of the fair saleable value (or fair valuation, if relevant under applicable law) of the

assets of Pledgor as of the date of such determination, determined in accordance with applicable federal and state laws governing determinations of insolvency of debtors, over (b) the amount of all liabilities of Pledgor, contingent or otherwise, as of the date of such determination, determined in accordance with applicable federal and state law as referenced in the preceding clause (a), and in all events prior to giving effect to Valuable Transfers.

"Incurred Amount" shall mean the maximum amount for which Pledgor may be liable under this instrument (after giving effect to the incurring of the obligations under this instrument and to any rights to contribution of Pledgor from other affiliates of Borrower) without rendering the rights to payment hereunder of Agent void, voidable or avoidable under any applicable fraudulent transfer law.

"Valuable Transfer" shall mean (a) all loans, advances or capital contributions made to Pledgor with proceeds of the Loans and Letters of Credit; (b) the fair market value of all property acquired with proceeds of the Loans and Letters of Credit and transferred to Pledgor; (c) the interest on and the fees in respect of the Loans and the Letters of Credit, the proceeds of which are used to make such a Valuable Transfer; and (d) the value of any quantifiable economic benefits not included in clauses (a) through (c) above, but includable in accordance with applicable federal and state laws governing determinations of the insolvency of debtors, accruing to Pledgor as a result of the Loans and Letters of Credit.

18.3. Debt May Exceed Pledgor's Maximum Liability. Pledgor agrees that the Debt may at any time and from time to time exceed the maximum amount of the Debt secured by this Agreement without impairing this Agreement or affecting the rights and remedies of Agent or the Banks hereunder.

18.4. Pledgor's Liability Not Reduced by Payments by Others. No payment or payments made by Borrower, Pledgor or any other Person or received or collected by Agent or the Banks from Borrower, Pledgor or any other Person by virtue of any action or proceeding or any set-off or appropriation or application at any time or from time to time in reduction of or in payment of the Debt shall be deemed to modify, reduce, release or otherwise affect the amount of the Debt secured by this Agreement and this Agreement shall, notwithstanding any such payment or payments (other than payments made to Agent or the Banks by Pledgor or payments received or collected by Agent or the Banks from Pledgor), secure the Debt up to the maximum amount of the Debt secured by this Agreement as set forth above until the Debt is indefeasibly paid in full in cash.

18.5. Adjustments to Maximum Liability. Anything in this Section 18 to the contrary notwithstanding, in no event shall the amount of the Debt secured by this Agreement as set forth in subsections 18.1 through 18.4 hereof exceed the Incurred Amount; and further provided that, if a greater amount of the Debt than the maximum liability set forth in this Section 18 could be secured by Pledgor as a result of an increase in Pledgor's Adjusted Net Worth subsequent to the date hereof, without rendering the rights to payment of Agent or the Banks hereunder void, voidable or avoidable under any applicable fraudulent transfer law, then the amount of Pledgor's maximum liability calculated in subsection 18.1 hereof shall be calculated based upon Pledgor's Adjusted Net Worth on such later date, rather than the date of execution of this Agreement.

19. Remedies Cumulative. All of the rights and remedies of Agent and the Banks with respect to the Collateral, whether established hereby or by the Documents, or by any other agreements or by law shall be cumulative and may be executed singularly or concurrently.

20. Severability. The provisions of this Agreement are severable, and, if any clause or provision shall be held invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Agreement in any jurisdiction.

21. Modifications. This Agreement may be amended or modified only by a writing signed by the parties hereto, except as provided in Section 16 above. In the event that any provision herein is deemed to be inconsistent with any provision of any other Documents (other than the Credit Agreement) relating to the Collateral, the provisions of this Agreement shall control.

22. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties, except that Pledgor may not assign any of its rights or duties hereunder without the prior written consent of Agent. Any attempted assignment or transfer without the prior written consent of Agent shall be null and void.

23. Notice. All notices, requests, demands and other communications provided for hereunder shall be in writing and, (a) if to Pledgor, mailed or delivered to it, addressed to it at the address specified on the signature page to this Agreement, (b) if to a Bank, mailed or delivered to it, addressed to the address of such Bank specified on the signature pages of the Credit Agreement, and (c) if to Agent, mailed or delivered to it, addressed to it at 2 PNC Plaza, 620 Liberty Avenue, 18th Floor, Pittsburgh, PA 15222, Attention: Richard Muse, Jr. All notices, statements, requests, demands and other communications provided for hereunder shall be deemed to be given or made when delivered by courier or forty-eight (48) hours after being deposited in the mails with postage prepaid by registered or certified mail, addressed as aforesaid, or sent by facsimile with telephonic confirmation of receipt, except that notices pursuant to any of the provisions hereof shall not be effective until received.

24. Governing Law/Jurisdiction. This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the State of Ohio, without regard to principles of conflicts of law. Pledgor hereby irrevocably submits to the non-exclusive jurisdiction of any Ohio state or federal court sitting in Cleveland, Ohio, over any action or proceeding arising out of or relating to this Agreement, any Loan Document or any Related Writing, and Pledgor hereby irrevocably agrees that all claims in respect of such action or proceeding may be heard and determined in such Ohio state or federal court. Pledgor hereby irrevocably waives, to the fullest extent permitted by law, any objection it may now or hereafter have to the laying of venue in any action or proceeding in any such court as well as any right it may now or hereafter have to remove such action or proceeding, once commenced, to another court on the grounds of FORUM NON CONVENIENS or otherwise. Pledgor agrees that a final, nonappealable judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

[Remainder of page intentionally left blank.]

25. JURY TRIAL WAIVER. PLEDGOR, AGENT AND THE BANKS, TO THE EXTENT PERMITTED BY LAW, EACH WAIVE ANY RIGHT TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE, AMONG AGENT, THE BANKS, AND PLEDGOR, OR ANY OF THEM, ARISING OUT OF, IN CONNECTION WITH, RELATED TO, OR INCIDENTAL TO THE RELATIONSHIP ESTABLISHED BETWEEN THEM IN CONNECTION WITH THIS AGREEMENT OR ANY NOTE OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION THEREWITH OR THE TRANSACTIONS RELATED THERETO. THIS WAIVER SHALL NOT IN ANY WAY AFFECT, WAIVE, LIMIT, AMEND OR MODIFY THE ABILITY OF ANY BANK TO PURSUE REMEDIES PURSUANT TO ANY CONFESSION OF JUDGMENT OR COGNOVIT PROVISION CONTAINED IN ANY NOTE, OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT AMONG PLEDGOR, BORROWER, AGENT AND THE BANKS, OR ANY OF THEM.

IN WITNESS WHEREOF, the undersigned has executed this Agreement as of the 21st day of May, 1999.

Address: 32000 Aurora Road
Solon, Ohio 44130

DEPOSITION SCIENCES, INC.

By: [Signature]
Title: Power of Attorney

PNC BANK, NATIONAL ASSOCIATION,
as Agent


By: [Signature]
Douglas K. Winget, Vice President

ACKNOWLEDGMENTS

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Nicholas R. Sucic, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said Deposition Sciences, Inc. an Ohio corporation, and that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.


GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Douglas K. Winget known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said PNC BANK, NATIONAL ASSOCIATION, a national banking association, and that he executed the same as the act of such national banking association for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

SCHEDULE A

May 21, 1999 11:07am -- JM5
CLE1: 249152 -- 359819 Ver9

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
SCHEDULE OF DEPOSITION SCIENCES, INC.'S PATENTS AND APPLICATIONS*

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	Patent 4,420,385	December 13, 1983
Deposition Sciences, Inc.	Method For Making Pigment Flakes	Patent 4,879,140	November 7, 1989
Deposition Sciences, Inc.	Photocell Array With Multi-spectral Filter	Patent 5,072,109	December 10, 1991
Deposition Sciences, Inc.	Method for Making Pigment Flakes	Patent 0 370 701B1 (Europe)	August 17, 1994
Deposition Sciences, Inc.	Multi-spectral Filter	Patent 5,164,858	November 17, 1992
Deposition Sciences, Inc.	Wear Resistant Transparent Dielectric Coatings	Patent 5,234,769	August 10, 1993
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	Patent 5,616,224	April 1, 1997
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96915638.9- 1215/0824604	May 8, 1996

* Unless otherwise indicated in () in the third column, the patent information on this chart is for US. patents.

15547.1 Ex. A to Collateral Assign/Sec Agreement-DSI

TRADEMARK
REEL: 001963 FRAME: 0407

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96-534243 (Japan)	May 8, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	Patent 5,714,009	February 3, 1998
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96906164.7/ PCT/US96/00399 (Patent Cooperative Treaty)	January 11, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96-521819 (Japan)	January 11, 1996
Deposition Sciences, Inc.	Sputtering Device And Method For Reactive Sputtering	Patent 5,849,162	December 15, 1998
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US94/06908	June 17, 1994
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US96/05589	April 23, 1996
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	Patent EPO 516 436 B1	January 16, 1997

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Sputtering Device	S.N. 94921324.3/ PCT/US94/06908 (Patent Cooperative Treaty)	June 17, 1994
Deposition Sciences, Inc.	Sputtering Device	S.N. 96913025.1/ PCT/US96/05589 (Patent Cooperative Treaty)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S.N. 96906309.8- 2203/0809719 (Europe)	December 3, 1997
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S. N. 96/524999 (Japan)	February 5, 1996
Deposition Sciences, Inc.	An Optical Interference Coating Capable of Withstanding Severe Temperature Environments	S.N. PCT/US97/21834 (Patent Cooperative Treaty)	November 26, 1997
Deposition Sciences, Inc.	Method for Making Pigment Flakes	S.N. 300954/89 (Japan)	November 21, 1989

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

DEPOSITION SCIENCES, INC.'S SCHEDULE OF MARKS*

REGISTERED OWNER	MARK	U.S. REGISTRATION NO.
Deposition Sciences, Inc.	EASS	Reg. 2,076,076
Deposition Sciences, Inc.	HEAT BUSTER	Reg. 2,081,960
Deposition Sciences, Inc.	PASSION FIRE	Reg. 2,089,963
Deposition Sciences, Inc.	MICRODYN	Reg. 2,091,689
Deposition Sciences, Inc.	TAVALITE	Reg. 2, 163,889

* Unless otherwise indicated in () in the third column, the trademark information in this chart is for U.S. trademarks.

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
DEPOSITION SCIENCES, INC.'S LICENSES

LICENSOR	LICENSEE	SUBJECT MATTER	DATE OF AGREEMENT	TERM OF AGREEMENT
Deposition Sciences, Inc.	Cardinal IG	License for R&D work using Microwave applicator	August 25, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Hankuk Glass	License for R&D work using Microwave applicator	February 22, 1994	Indefinite - NDA clause, 10 years
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Except as specifically defined herein, all capitalized terms used herein that are defined in the Credit Agreement shall have their respective meanings ascribed to them in the Credit Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Grant of Assignment and Security Interest. To secure Pledgor's guaranty of the Debt, as hereinafter defined, Pledgor hereby grants to Agent, for the benefit of the Banks, a security interest in, and assigns and conveys to Agent, for the benefit of the Banks, subject to Section 9 hereof, all of Pledgor's patents, patent applications, trademarks and all goodwill associated therewith, and trademark registrations, now owned and hereafter acquired, including, but not limited to, the patents, patent applications, trademark registrations, both federal and state, trademark applications, common law trademark rights, improvements, inventions, copyrights, and copyright registrations listed in Schedule A hereto and all goodwill associated therewith (as such Schedule A may be amended pursuant hereto from time to time, but only with the prior written consent of Agent), including, without limitation, all renewals thereof, all proceeds on infringement suits, the right to sue for past, present and future infringements and all rights corresponding thereto throughout the world, and the goodwill of the business to which each of the trademarks relate (all of the foregoing collectively

referred to herein as the "Collateral"). Schedule A is incorporated into and made a part of this Agreement by reference, the same as if it were fully set forth herein.

2. Obligations Secured. The obligations secured by this Agreement (collectively, the "Debt") for the payment and performance of, collectively, (a) any indebtedness arising under the Guaranty of Payment, as defined in the Credit Agreement, executed by Pledgor in favor of Agent of even date herewith; (b) each renewal, extension, consolidation or refinancing of any of the foregoing, in whole or in part; and (c) all interest from time to time accruing on any of the foregoing.

3. Warranties and Representations. Pledgor represents and warrants to Agent and the Banks that each of the following statements is true and complete:

(a) Pledgor owns the Collateral and, whether the same are registered or unregistered, no such Collateral has been adjudged invalid or unenforceable.

(b) The Collateral is valid and enforceable.

(c) Pledgor has no knowledge of any claim that the use of any of the Collateral does or may violate the rights of any third person.

(d) Except for the liens granted in this Agreement or permitted by the Credit Agreement, Pledgor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to the Collateral, free and clear of any liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements and covenants by Pledgor not to sue third persons.

(e) Pledgor has full power, authority and legal right to pledge the Collateral and enter into this Agreement and perform its terms.

(f) Pledgor has used, and will continue to use, for the duration of this Agreement, proper statutory notice in connection with its use of the Collateral, except where the failure to do so will not have a material adverse effect.

4. Right to Use. Unless and until there shall have occurred an Event of Default (as that term is defined in Section 8 of this Agreement), Agent, on behalf of the Banks, to the extent permitted by law, hereby grants to Pledgor the exclusive, royalty-free, world-wide, nontransferable right and license to use the Collateral, including without limitation the right to act in the normal course of business with respect to the protection, renewal, maintenance or perfection, on and in connection with products manufactured, distributed, or both by or in connection with products sold by Pledgor, for Pledgor's sole benefit and account and for none other. Pledgor shall not enter into any agreement that is inconsistent with Pledgor's obligations under this Agreement and shall not otherwise sell or assign its interest in, or grant any sublicense under, the license granted to Pledgor hereunder, except in the ordinary course of business, without Agent's prior written consent. Absent such prior written consent, any attempted sale or license is null and void.

5. Right to Inspect. Pledgor hereby grants to Agent and its employees and agents the right, during regular business hours and upon reasonable notice, to visit Pledgor's plants and facilities or the plants and facilities of any subcontractors that manufacture, inspect, sell or store products sold under any of the Collateral, and to inspect the products and quality control records relating thereto at reasonable times during regular business hours, at Pledgor's expense.

6. Standard Patent and Trademark Use. Pledgor shall not use the Collateral in any manner that would jeopardize the validity or legal status thereof. Pledgor shall comply with all patent marking requirements as specified in 35 U.S.C. §287. Pledgor shall further conform its usage of any trademarks to standard trademark usage, including, but not limited to, using the trademark symbols ®, ™, and SM where appropriate.

7. Event of Default.

(a) The occurrence of any of the following shall constitute an "Event of Default" under this Agreement:

(i) If an Event of Default, as defined in the Credit Agreement, shall occur under the Credit Agreement; or

(ii) If Pledgor shall fail to perform any obligation of Pledgor to be performed under this Agreement and the same shall not have been fully corrected within twenty (20) days after the giving of written notice thereof to Pledgor by Agent or any Bank.

(b) If any Event of Default shall have occurred, Pledgor irrevocably authorizes and empowers Agent, on behalf of the Banks, to terminate Pledgor's use of the Collateral and to exercise such rights and remedies as allowed by law. Without limiting the generality of the foregoing, Agent may immediately sell at public or private sale, in a commercially reasonable manner, or otherwise realize upon all or, from time to time, any of the Collateral together with the associated goodwill, or any interest that Pledgor may have therein, and, after deducting from the proceeds of sale or other disposition of the Collateral all reasonable expenses (including all expenses for attorneys' and brokers' fees and other legal services), Agent shall apply the residue of such proceeds against payment of the Debt. Any remainder of the proceeds, after payment in full of the Debt, shall be distributed in accordance with the Chapter 1309 of the Ohio Revised Code. Notice of any sale or other disposition of the Collateral shall be given to Pledgor at least five (5) business days before the time of any intended public or private sale or other disposition of the Collateral is to be made, which Pledgor hereby agrees shall be reasonable notice of such sale or other disposition. At any such sale or other disposition, Agent or any Bank may, to the extent permissible under applicable law, purchase the whole or any part of the Collateral sold, free from any right of redemption on the part of Pledgor, which right is hereby waived and released.

8. Termination. At such time as the Debt has been irrevocably paid in full, the Commitment, as defined in the Credit Agreement, terminated, and the Credit Agreement terminated and not replaced by any other credit facility with Agent and the Banks, this Agreement shall terminate and Agent shall execute and deliver to Pledgor all deeds, assignments, and other

instruments as may be necessary or proper to release Agent's security interest in and assignment of the Collateral and to re-vest in Pledgor full title to the Collateral, subject to any disposition thereof that may have been made by Agent pursuant hereto.

9. Maintaining Collateral, Attorneys' Fees, Costs and Expenses. Pledgor shall have the obligation and duty to perform all acts necessary to maintain or preserve the Collateral, provided that Pledgor shall not be obligated to maintain any Collateral in the event Pledgor determines, in the reasonable business judgment of Pledgor, that the maintenance of such Collateral is no longer necessary in Pledgor's business. Any and all reasonable fees, costs and expenses, of whatever kind or nature, including, without limitation, the attorneys' fees and legal expenses incurred by Agent and the Banks in connection with the amendment and enforcement of this Agreement, all renewals, required affidavits and all other documents relating hereto and the consummation of this transaction, the filing or recording of any documents (including all taxes in connection therewith) in public offices, the payment or discharge of any taxes, counsel fees, maintenance fees, encumbrances or otherwise protecting, maintaining or preserving the Collateral, or in defending or prosecuting any actions or proceedings arising out of or related to the Collateral, shall be borne and paid by Pledgor, upon demand by Agent, and, until so paid, shall be added to the principal amount of the Debt.

10. Pledgor's Obligations to Prosecute. Except as otherwise agreed to by Agent in writing, Pledgor shall have the duty to prosecute diligently any patent application or trademark application pending as of the date of this Agreement or thereafter until the Debt shall have been paid in full, to file and prosecute opposition and cancellation proceedings and to do any and all acts that are necessary or desirable to preserve and maintain all rights in the Collateral, including, but not limited to, payment of any maintenance fees. Any expenses incurred in connection with the Collateral shall be borne by Pledgor. Pledgor shall not abandon any Collateral without the prior written consent of Agent, unless such abandonment will not have a material adverse effect on Pledgor or such abandonment is in connection with the abandonment of a product or product line.

11. Agent's Rights to Enforce. Pledgor shall have the right to bring any opposition proceedings, cancellation proceedings or lawsuit in its own name to enforce or protect the Collateral. Agent and the Banks shall have the right, but shall have no obligation, to join in any such action. Pledgor shall promptly, upon demand, reimburse and indemnify Agent and the Banks for all damages, reasonable costs and expenses, including attorneys' fees incurred by Agent in connection with the provisions of this Section 11, in the event Agent and the Banks elect to join in any such action commenced by Pledgor.

12. Power of Attorney. Pledgor hereby authorizes and empowers Agent, on behalf of the Banks, to make, constitute and appoint any officer or agent of Agent as Agent may select, in its exclusive discretion, as Pledgor's true and lawful attorney-in-fact, with the power to endorse, after the occurrence of an Event of Default, Pledgor's name on all applications, documents, papers and instruments necessary for Agent to use the Collateral, or to grant or issue any exclusive or nonexclusive license under the Collateral to any third party, or necessary for Agent to assign, pledge, convey or otherwise transfer title in or dispose of the Collateral, together with associated goodwill to a third party or parties. Pledgor hereby ratifies all that such attorney shall lawfully do or cause

to be done by virtue hereof. This power of attorney shall be irrevocable for the life of this Agreement.

13. Agent's Right to Perform Obligations. If Pledgor fails to comply with any of its obligations under this Agreement, Agent, on behalf of the Banks, may, but is not obligated to, do so in Pledgor's name or in Agent's name, but at Pledgor's expense, and Pledgor hereby agrees to reimburse Agent on demand in full for all expenses, including attorneys' fees, incurred by Agent in protecting, defending and maintaining the Collateral.

14. Additional Documents. Pledgor shall, upon written request of Agent, enter into such additional documents or instruments as may be required by Agent in order to effectuate, evidence or perfect Agent's interests in the Collateral as evidenced by this Agreement.

15. New Collateral. If, before the Debt shall have been satisfied in full, Pledgor shall obtain rights to any new Collateral, the provisions of Section 1 shall automatically apply thereto as if the same were identified on Schedule A as of the date hereof and Pledgor shall give Agent prompt written notice thereof.

16. Modification for New Collateral. Pledgor hereby authorizes Agent to modify this Agreement by amending Schedule A to include any future Collateral as contemplated by Sections 1 and 16 hereof and, at Agent's request, Pledgor shall execute any documents or instruments required by Agent in order to modify this Agreement as provided in this Section 16, provided that any such modification to Schedule A shall be effective without the signature of Pledgor.

17. No Waiver. No course of dealing between Pledgor and Agent and the Banks, nor any failure to exercise, nor any delay in exercising, on the part of Agent or the Banks, any right, power or privilege hereunder, under any of the Loan Documents, or any other document executed in connection with any of the foregoing ("Documents") shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

18. MAXIMUM LIABILITY OF PLEDGOR.

18.1. Pledgor's Liability Limited in Amount. Subject to subsection 18.5 hereof, but otherwise notwithstanding anything to the contrary contained in this Agreement, the maximum amount of the Debt secured by this Agreement shall not exceed the sum of (a) that portion of the Loans and Letters of Credit the proceeds of which are used by Borrower to make Valuable Transfers (as hereinafter defined) to Pledgor, plus (b) ninety-five percent (95%) of the Adjusted Net Worth (as hereinafter defined), but only to the extent that the Adjusted Net Worth is a positive number, of Pledgor at the date of this Agreement.

18.2. Definition of Terms Used in Section 18. For purposes of this Section 18:

"Adjusted Net Worth" shall mean, as of any date of determination thereof, the excess of (a) the amount of the fair saleable value (or fair valuation, if relevant under applicable law) of the

assets of Pledgor as of the date of such determination, determined in accordance with applicable federal and state laws governing determinations of insolvency of debtors, over (b) the amount of all liabilities of Pledgor, contingent or otherwise, as of the date of such determination, determined in accordance with applicable federal and state law as referenced in the preceding clause (a), and in all events prior to giving effect to Valuable Transfers.

“Incurred Amount” shall mean the maximum amount for which Pledgor may be liable under this instrument (after giving effect to the incurring of the obligations under this instrument and to any rights to contribution of Pledgor from other affiliates of Borrower) without rendering the rights to payment hereunder of Agent void, voidable or avoidable under any applicable fraudulent transfer law.

“Valuable Transfer” shall mean (a) all loans, advances or capital contributions made to Pledgor with proceeds of the Loans and Letters of Credit; (b) the fair market value of all property acquired with proceeds of the Loans and Letters of Credit and transferred to Pledgor; (c) the interest on and the fees in respect of the Loans and the Letters of Credit, the proceeds of which are used to make such a Valuable Transfer; and (d) the value of any quantifiable economic benefits not included in clauses (a) through (c) above, but includable in accordance with applicable federal and state laws governing determinations of the insolvency of debtors, accruing to Pledgor as a result of the Loans and Letters of Credit.

18.3. Debt May Exceed Pledgor's Maximum Liability. Pledgor agrees that the Debt may at any time and from time to time exceed the maximum amount of the Debt secured by this Agreement without impairing this Agreement or affecting the rights and remedies of Agent or the Banks hereunder.

18.4. Pledgor's Liability Not Reduced by Payments by Others. No payment or payments made by Borrower, Pledgor or any other Person or received or collected by Agent or the Banks from Borrower, Pledgor or any other Person by virtue of any action or proceeding or any set-off or appropriation or application at any time or from time to time in reduction of or in payment of the Debt shall be deemed to modify, reduce, release or otherwise affect the amount of the Debt secured by this Agreement and this Agreement shall, notwithstanding any such payment or payments (other than payments made to Agent or the Banks by Pledgor or payments received or collected by Agent or the Banks from Pledgor), secure the Debt up to the maximum amount of the Debt secured by this Agreement as set forth above until the Debt is indefeasibly paid in full in cash.

18.5. Adjustments to Maximum Liability. Anything in this Section 18 to the contrary notwithstanding, in no event shall the amount of the Debt secured by this Agreement as set forth in subsections 18.1 through 18.4 hereof exceed the Incurred Amount; and further provided that, if a greater amount of the Debt than the maximum liability set forth in this Section 18 could be secured by Pledgor as a result of an increase in Pledgor's Adjusted Net Worth subsequent to the date hereof, without rendering the rights to payment of Agent or the Banks hereunder void, voidable or avoidable under any applicable fraudulent transfer law, then the amount of Pledgor's maximum liability calculated in subsection 18.1 hereof shall be calculated based upon Pledgor's Adjusted Net Worth on such later date, rather than the date of execution of this Agreement.

19. Remedies Cumulative. All of the rights and remedies of Agent and the Banks with respect to the Collateral, whether established hereby or by the Documents, or by any other agreements or by law shall be cumulative and may be executed singularly or concurrently.

20. Severability. The provisions of this Agreement are severable, and, if any clause or provision shall be held invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Agreement in any jurisdiction.

21. Modifications. This Agreement may be amended or modified only by a writing signed by the parties hereto, except as provided in Section 16 above. In the event that any provision herein is deemed to be inconsistent with any provision of any other Documents (other than the Credit Agreement) relating to the Collateral, the provisions of this Agreement shall control.

22. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties, except that Pledgor may not assign any of its rights or duties hereunder without the prior written consent of Agent. Any attempted assignment or transfer without the prior written consent of Agent shall be null and void.

23. Notice. All notices, requests, demands and other communications provided for hereunder shall be in writing and, (a) if to Pledgor, mailed or delivered to it, addressed to it at the address specified on the signature page to this Agreement, (b) if to a Bank, mailed or delivered to it, addressed to the address of such Bank specified on the signature pages of the Credit Agreement, and (c) if to Agent, mailed or delivered to it, addressed to it at 2 PNC Plaza, 620 Liberty Avenue, 18th Floor, Pittsburgh, PA 15222, Attention: Richard Muse, Jr. All notices, statements, requests, demands and other communications provided for hereunder shall be deemed to be given or made when delivered by courier or forty-eight (48) hours after being deposited in the mails with postage prepaid by registered or certified mail, addressed as aforesaid, or sent by facsimile with telephonic confirmation of receipt, except that notices pursuant to any of the provisions hereof shall not be effective until received.

24. Governing Law/Jurisdiction. This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the State of Ohio, without regard to principles of conflicts of law. Pledgor hereby irrevocably submits to the non-exclusive jurisdiction of any Ohio state or federal court sitting in Cleveland, Ohio, over any action or proceeding arising out of or relating to this Agreement, any Loan Document or any Related Writing, and Pledgor hereby irrevocably agrees that all claims in respect of such action or proceeding may be heard and determined in such Ohio state or federal court. Pledgor hereby irrevocably waives, to the fullest extent permitted by law, any objection it may now or hereafter have to the laying of venue in any action or proceeding in any such court as well as any right it may now or hereafter have to remove such action or proceeding, once commenced, to another court on the grounds of FORUM NON CONVENIENS or otherwise. Pledgor agrees that a final, nonappealable judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

[Remainder of page intentionally left blank.]

25. JURY TRIAL WAIVER. PLEDGOR, AGENT AND THE BANKS, TO THE EXTENT PERMITTED BY LAW, EACH WAIVE ANY RIGHT TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE, AMONG AGENT, THE BANKS, AND PLEDGOR, OR ANY OF THEM, ARISING OUT OF, IN CONNECTION WITH, RELATED TO, OR INCIDENTAL TO THE RELATIONSHIP ESTABLISHED BETWEEN THEM IN CONNECTION WITH THIS AGREEMENT OR ANY NOTE OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION THEREWITH OR THE TRANSACTIONS RELATED THERETO. THIS WAIVER SHALL NOT IN ANY WAY AFFECT, WAIVE, LIMIT, AMEND OR MODIFY THE ABILITY OF ANY BANK TO PURSUE REMEDIES PURSUANT TO ANY CONFESSION OF JUDGMENT OR COGNOVIT PROVISION CONTAINED IN ANY NOTE, OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT AMONG PLEDGOR, BORROWER, AGENT AND THE BANKS, OR ANY OF THEM.

IN WITNESS WHEREOF, the undersigned has executed this Agreement as of the 21st day of May, 1999.

Address: 32000 Aurora Road
Solon, Ohio 44130

DEPOSITION SCIENCES, INC.

By: [Signature]
Title: Power of Attorney

PNC BANK, NATIONAL ASSOCIATION,
as Agent


By: [Signature]
Douglas K. Winget, Vice President

ACKNOWLEDGMENTS

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Nicholas R. Sucic, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said Deposition Sciences, Inc, an Ohio corporation, and that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Douglas K. Winget known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said PNC BANK, NATIONAL ASSOCIATION, a national banking association, and that he executed the same as the act of such national banking association for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

SCHEDULE A

May 21, 1999 11:07am -- JM5
CLEI: 249152 -- 359819 Ver9

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
SCHEDULE OF DEPOSITION SCIENCES, INC.'S PATENTS AND APPLICATIONS*

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	Patent 4,420,385	December 13, 1983
Deposition Sciences, Inc.	Method For Making Pigment Flakes	Patent 4,879,140	November 7, 1989
Deposition Sciences, Inc.	Photocell Array With Multi-spectral Filter	Patent 5,072,109	December 10, 1991
Deposition Sciences, Inc.	Method for Making Pigment Flakes	Patent 0 370 701B1 (Europe)	August 17, 1994
Deposition Sciences, Inc.	Multi-spectral Filter	Patent 5,164,858	November 17, 1992
Deposition Sciences, Inc.	Wear Resistant Transparent Dielectric Coatings	Patent 5,234,769	August 10, 1993
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	Patent 5,616,224	April 1, 1997
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96915638.9- 1215/0824604	May 8, 1996

* Unless otherwise indicated in () in the third column, the patent information on this chart is for US. patents.

15547.1 Ex. A to Collateral Assign/Sec Agreement-DSI

TRADEMARK
REEL: 001963 FRAME: 0423

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96-534243 (Japan)	May 8, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	Patent 5,714,009	February 3, 1998
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96906164.7/ PCT/US96/00399 (Patent Cooperative Treaty)	January 11, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96-521819 (Japan)	January 11, 1996
Deposition Sciences, Inc.	Sputtering Device And Method For Reactive Sputtering	Patent 5,849,162	December 15, 1998
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US94/06908	June 17, 1994
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US96/05589	April 23, 1996
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	Patent EPO 516 436 B1	January 16, 1997

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Sputtering Device	S.N. 94921324.3/ PCT/US94/06908 (Patent Cooperative Treaty)	June 17, 1994
Deposition Sciences, Inc.	Sputtering Device	S.N. 96913025.1/ PCT/US96/05589 (Patent Cooperative Treaty)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S.N. 96906309.8- 2203/0809719 (Europe)	December 3, 1997
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S. N. 96/524999 (Japan)	February 5, 1996
Deposition Sciences, Inc.	An Optical Interference Coating Capable of Withstanding Severe Temperature Environments	S.N. PCT/US97/21834 (Patent Cooperative Treaty)	November 26, 1997
Deposition Sciences, Inc.	Method for Making Pigment Flakes	S.N. 300954/89 (Japan)	November 21, 1989

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

DEPOSITION SCIENCES, INC.'S SCHEDULE OF MARKS*

REGISTERED OWNER	MARK	U.S. REGISTRATION NO.
Deposition Sciences, Inc.	EASS	Reg. 2,076,076
Deposition Sciences, Inc.	HEAT BUSTER	Reg. 2,081,960
Deposition Sciences, Inc.	PASSION FIRE	Reg. 2,089,963
Deposition Sciences, Inc.	MICRODYN	Reg. 2,091,689
Deposition Sciences, Inc.	TAVALITE	Reg. 2, 163,889

* Unless otherwise indicated in () in the third column, the trademark information in this chart is for U.S. trademarks.

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
DEPOSITION SCIENCES, INC.'S LICENSES

LICENSOR	LICENSEE	SUBJECT MATTER	DATE OF AGREEMENT	TERM OF AGREEMENT
Deposition Sciences, Inc.	Cardinal IG	License for R&D work using Microwave applicator	August 25, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Hankuk Glass	License for R&D work using Microwave applicator	February 22, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Iwasaki	MR16 lamp coating	April 15, 1992	April 15, 2002 or upon last patent expiration
Deposition Sciences, Inc.	PPG	Ophthalmic Electrooptical coatings	May 28, 1996	May 28, 2006
Deposition Sciences, Inc.	Sola	AR coating of plastic lenses	July 12, 1995	July 12, 2005 or upon last patent expiration

COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

RECITALS:

Concurrently herewith, ADVANCED LIGHTING TECHNOLOGIES, INC., an Ohio corporation ("Borrower"), is entering into a Credit Agreement with the financial institutions listed on Schedule 1 to the Credit Agreement (collectively, together with their respective successors and assigns, "Banks" and individually, "Bank") and PNC BANK, NATIONAL ASSOCIATION, as agent for the Banks ("Agent") (the "Credit Agreement"). DEPOSITION SCIENCES, INC., an Ohio corporation, ("Pledgor") desires that the Banks grant the financial accommodations described in the Credit Agreement to Borrower.

Pledgor deems it to be in the direct pecuniary, commercial and business interests of Pledgor that Borrower obtain from the Banks the Commitment, as defined in the Credit Agreement, and the Loans and Letters of Credit, as hereinafter defined, provided for in the Credit Agreement.

Pledgor understands that the Banks are willing to grant such financial accommodations to Borrower only upon certain terms and conditions, one of which is that Pledgor grant to Agent, for the benefit of the Banks, a security interest in and an assignment of the Collateral, as hereinafter defined, and this Agreement (as the same may from time to time be amended, restated or otherwise modified, this "Agreement") is being executed and delivered in consideration of each financial accommodation, if any, granted to Borrower by the Banks and for other valuable considerations.

Except as specifically defined herein, all capitalized terms used herein that are defined in the Credit Agreement shall have their respective meanings ascribed to them in the Credit Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Grant of Assignment and Security Interest. To secure Pledgor's guaranty of the Debt, as hereinafter defined, Pledgor hereby grants to Agent, for the benefit of the Banks, a security interest in, and assigns and conveys to Agent, for the benefit of the Banks, subject to Section 9 hereof, all of Pledgor's patents, patent applications, trademarks and all goodwill associated therewith, and trademark registrations, now owned and hereafter acquired, including, but not limited to, the patents, patent applications, trademark registrations, both federal and state, trademark applications, common law trademark rights, improvements, inventions, copyrights, and copyright registrations listed in Schedule A hereto and all goodwill associated therewith (as such Schedule A may be amended pursuant hereto from time to time, but only with the prior written consent of Agent), including, without limitation, all renewals thereof, all proceeds on infringement suits, the right to sue for past, present and future infringements and all rights corresponding thereto throughout the world, and the goodwill of the business to which each of the trademarks relate (all of the foregoing collectively

referred to herein as the "Collateral"). Schedule A is incorporated into and made a part of this Agreement by reference, the same as if it were fully set forth herein.

2. Obligations Secured. The obligations secured by this Agreement (collectively, the "Debt") for the payment and performance of, collectively, (a) any indebtedness arising under the Guaranty of Payment, as defined in the Credit Agreement, executed by Pledgor in favor of Agent of even date herewith; (b) each renewal, extension, consolidation or refinancing of any of the foregoing, in whole or in part; and (c) all interest from time to time accruing on any of the foregoing.

3. Warranties and Representations. Pledgor represents and warrants to Agent and the Banks that each of the following statements is true and complete:

(a) Pledgor owns the Collateral and, whether the same are registered or unregistered, no such Collateral has been adjudged invalid or unenforceable.

(b) The Collateral is valid and enforceable.

(c) Pledgor has no knowledge of any claim that the use of any of the Collateral does or may violate the rights of any third person.

(d) Except for the liens granted in this Agreement or permitted by the Credit Agreement, Pledgor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to the Collateral, free and clear of any liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements and covenants by Pledgor not to sue third persons.

(e) Pledgor has full power, authority and legal right to pledge the Collateral and enter into this Agreement and perform its terms.

(f) Pledgor has used, and will continue to use, for the duration of this Agreement, proper statutory notice in connection with its use of the Collateral, except where the failure to do so will not have a material adverse effect.

4. Right to Use. Unless and until there shall have occurred an Event of Default (as that term is defined in Section 8 of this Agreement), Agent, on behalf of the Banks, to the extent permitted by law, hereby grants to Pledgor the exclusive, royalty-free, world-wide, nontransferable right and license to use the Collateral, including without limitation the right to act in the normal course of business with respect to the protection, renewal, maintenance or perfection, on and in connection with products manufactured, distributed, or both by or in connection with products sold by Pledgor, for Pledgor's sole benefit and account and for none other. Pledgor shall not enter into any agreement that is inconsistent with Pledgor's obligations under this Agreement and shall not otherwise sell or assign its interest in, or grant any sublicense under, the license granted to Pledgor hereunder, except in the ordinary course of business, without Agent's prior written consent. Absent such prior written consent, any attempted sale or license is null and void.

5. Right to Inspect. Pledgor hereby grants to Agent and its employees and agents the right, during regular business hours and upon reasonable notice, to visit Pledgor's plants and facilities or the plants and facilities of any subcontractors that manufacture, inspect, sell or store products sold under any of the Collateral, and to inspect the products and quality control records relating thereto at reasonable times during regular business hours, at Pledgor's expense.

6. Standard Patent and Trademark Use. Pledgor shall not use the Collateral in any manner that would jeopardize the validity or legal status thereof. Pledgor shall comply with all patent marking requirements as specified in 35 U.S.C. §287. Pledgor shall further conform its usage of any trademarks to standard trademark usage, including, but not limited to, using the trademark symbols ®, ™, and SM where appropriate.

7. Event of Default.

(a) The occurrence of any of the following shall constitute an "Event of Default" under this Agreement:

(i) If an Event of Default, as defined in the Credit Agreement, shall occur under the Credit Agreement; or

(ii) If Pledgor shall fail to perform any obligation of Pledgor to be performed under this Agreement and the same shall not have been fully corrected within twenty (20) days after the giving of written notice thereof to Pledgor by Agent or any Bank.

(b) If any Event of Default shall have occurred, Pledgor irrevocably authorizes and empowers Agent, on behalf of the Banks, to terminate Pledgor's use of the Collateral and to exercise such rights and remedies as allowed by law. Without limiting the generality of the foregoing, Agent may immediately sell at public or private sale, in a commercially reasonable manner, or otherwise realize upon all or, from time to time, any of the Collateral together with the associated goodwill, or any interest that Pledgor may have therein, and, after deducting from the proceeds of sale or other disposition of the Collateral all reasonable expenses (including all expenses for attorneys' and brokers' fees and other legal services), Agent shall apply the residue of such proceeds against payment of the Debt. Any remainder of the proceeds, after payment in full of the Debt, shall be distributed in accordance with the Chapter 1309 of the Ohio Revised Code. Notice of any sale or other disposition of the Collateral shall be given to Pledgor at least five (5) business days before the time of any intended public or private sale or other disposition of the Collateral is to be made, which Pledgor hereby agrees shall be reasonable notice of such sale or other disposition. At any such sale or other disposition, Agent or any Bank may, to the extent permissible under applicable law, purchase the whole or any part of the Collateral sold, free from any right of redemption on the part of Pledgor, which right is hereby waived and released.

8. Termination. At such time as the Debt has been irrevocably paid in full, the Commitment, as defined in the Credit Agreement, terminated, and the Credit Agreement terminated and not replaced by any other credit facility with Agent and the Banks, this Agreement shall terminate and Agent shall execute and deliver to Pledgor all deeds, assignments, and other

instruments as may be necessary or proper to release Agent's security interest in and assignment of the Collateral and to re-vest in Pledgor full title to the Collateral, subject to any disposition thereof that may have been made by Agent pursuant hereto.

9. Maintaining Collateral, Attorneys' Fees, Costs and Expenses. Pledgor shall have the obligation and duty to perform all acts necessary to maintain or preserve the Collateral, provided that Pledgor shall not be obligated to maintain any Collateral in the event Pledgor determines, in the reasonable business judgment of Pledgor, that the maintenance of such Collateral is no longer necessary in Pledgor's business. Any and all reasonable fees, costs and expenses, of whatever kind or nature, including, without limitation, the attorneys' fees and legal expenses incurred by Agent and the Banks in connection with the amendment and enforcement of this Agreement, all renewals, required affidavits and all other documents relating hereto and the consummation of this transaction, the filing or recording of any documents (including all taxes in connection therewith) in public offices, the payment or discharge of any taxes, counsel fees, maintenance fees, encumbrances or otherwise protecting, maintaining or preserving the Collateral, or in defending or prosecuting any actions or proceedings arising out of or related to the Collateral, shall be borne and paid by Pledgor, upon demand by Agent, and, until so paid, shall be added to the principal amount of the Debt.

10. Pledgor's Obligations to Prosecute. Except as otherwise agreed to by Agent in writing, Pledgor shall have the duty to prosecute diligently any patent application or trademark application pending as of the date of this Agreement or thereafter until the Debt shall have been paid in full, to file and prosecute opposition and cancellation proceedings and to do any and all acts that are necessary or desirable to preserve and maintain all rights in the Collateral, including, but not limited to, payment of any maintenance fees. Any expenses incurred in connection with the Collateral shall be borne by Pledgor. Pledgor shall not abandon any Collateral without the prior written consent of Agent, unless such abandonment will not have a material adverse effect on Pledgor or such abandonment is in connection with the abandonment of a product or product line.

11. Agent's Rights to Enforce. Pledgor shall have the right to bring any opposition proceedings, cancellation proceedings or lawsuit in its own name to enforce or protect the Collateral. Agent and the Banks shall have the right, but shall have no obligation, to join in any such action. Pledgor shall promptly, upon demand, reimburse and indemnify Agent and the Banks for all damages, reasonable costs and expenses, including attorneys' fees incurred by Agent in connection with the provisions of this Section 11, in the event Agent and the Banks elect to join in any such action commenced by Pledgor.

12. Power of Attorney. Pledgor hereby authorizes and empowers Agent, on behalf of the Banks, to make, constitute and appoint any officer or agent of Agent as Agent may select, in its exclusive discretion, as Pledgor's true and lawful attorney-in-fact, with the power to endorse, after the occurrence of an Event of Default, Pledgor's name on all applications, documents, papers and instruments necessary for Agent to use the Collateral, or to grant or issue any exclusive or nonexclusive license under the Collateral to any third party, or necessary for Agent to assign, pledge, convey or otherwise transfer title in or dispose of the Collateral, together with associated goodwill to a third party or parties. Pledgor hereby ratifies all that such attorney shall lawfully do or cause

to be done by virtue hereof. This power of attorney shall be irrevocable for the life of this Agreement.

13. Agent's Right to Perform Obligations. If Pledgor fails to comply with any of its obligations under this Agreement, Agent, on behalf of the Banks, may, but is not obligated to, do so in Pledgor's name or in Agent's name, but at Pledgor's expense, and Pledgor hereby agrees to reimburse Agent on demand in full for all expenses, including attorneys' fees, incurred by Agent in protecting, defending and maintaining the Collateral.

14. Additional Documents. Pledgor shall, upon written request of Agent, enter into such additional documents or instruments as may be required by Agent in order to effectuate, evidence or perfect Agent's interests in the Collateral as evidenced by this Agreement.

15. New Collateral. If, before the Debt shall have been satisfied in full, Pledgor shall obtain rights to any new Collateral, the provisions of Section 1 shall automatically apply thereto as if the same were identified on Schedule A as of the date hereof and Pledgor shall give Agent prompt written notice thereof.

16. Modification for New Collateral. Pledgor hereby authorizes Agent to modify this Agreement by amending Schedule A to include any future Collateral as contemplated by Sections 1 and 16 hereof and, at Agent's request, Pledgor shall execute any documents or instruments required by Agent in order to modify this Agreement as provided in this Section 16, provided that any such modification to Schedule A shall be effective without the signature of Pledgor.

17. No Waiver. No course of dealing between Pledgor and Agent and the Banks, nor any failure to exercise, nor any delay in exercising, on the part of Agent or the Banks, any right, power or privilege hereunder, under any of the Loan Documents, or any other document executed in connection with any of the foregoing ("Documents") shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

18. MAXIMUM LIABILITY OF PLEDGOR.

18.1. Pledgor's Liability Limited in Amount. Subject to subsection 18.5 hereof, but otherwise notwithstanding anything to the contrary contained in this Agreement, the maximum amount of the Debt secured by this Agreement shall not exceed the sum of (a) that portion of the Loans and Letters of Credit the proceeds of which are used by Borrower to make Valuable Transfers (as hereinafter defined) to Pledgor, plus (b) ninety-five percent (95%) of the Adjusted Net Worth (as hereinafter defined), but only to the extent that the Adjusted Net Worth is a positive number, of Pledgor at the date of this Agreement.

18.2. Definition of Terms Used in Section 18. For purposes of this Section 18:

"Adjusted Net Worth" shall mean, as of any date of determination thereof, the excess of (a) the amount of the fair saleable value (or fair valuation, if relevant under applicable law) of the

assets of Pledgor as of the date of such determination, determined in accordance with applicable federal and state laws governing determinations of insolvency of debtors, over (b) the amount of all liabilities of Pledgor, contingent or otherwise, as of the date of such determination, determined in accordance with applicable federal and state law as referenced in the preceding clause (a), and in all events prior to giving effect to Valuable Transfers.

“Incurred Amount” shall mean the maximum amount for which Pledgor may be liable under this instrument (after giving effect to the incurring of the obligations under this instrument and to any rights to contribution of Pledgor from other affiliates of Borrower) without rendering the rights to payment hereunder of Agent void, voidable or avoidable under any applicable fraudulent transfer law.

“Valuable Transfer” shall mean (a) all loans, advances or capital contributions made to Pledgor with proceeds of the Loans and Letters of Credit; (b) the fair market value of all property acquired with proceeds of the Loans and Letters of Credit and transferred to Pledgor; (c) the interest on and the fees in respect of the Loans and the Letters of Credit, the proceeds of which are used to make such a Valuable Transfer; and (d) the value of any quantifiable economic benefits not included in clauses (a) through (c) above, but includable in accordance with applicable federal and state laws governing determinations of the insolvency of debtors, accruing to Pledgor as a result of the Loans and Letters of Credit.

18.3. Debt May Exceed Pledgor's Maximum Liability. Pledgor agrees that the Debt may at any time and from time to time exceed the maximum amount of the Debt secured by this Agreement without impairing this Agreement or affecting the rights and remedies of Agent or the Banks hereunder.

18.4. Pledgor's Liability Not Reduced by Payments by Others. No payment or payments made by Borrower, Pledgor or any other Person or received or collected by Agent or the Banks from Borrower, Pledgor or any other Person by virtue of any action or proceeding or any set-off or appropriation or application at any time or from time to time in reduction of or in payment of the Debt shall be deemed to modify, reduce, release or otherwise affect the amount of the Debt secured by this Agreement and this Agreement shall, notwithstanding any such payment or payments (other than payments made to Agent or the Banks by Pledgor or payments received or collected by Agent or the Banks from Pledgor), secure the Debt up to the maximum amount of the Debt secured by this Agreement as set forth above until the Debt is indefeasibly paid in full in cash.

18.5. Adjustments to Maximum Liability. Anything in this Section 18 to the contrary notwithstanding, in no event shall the amount of the Debt secured by this Agreement as set forth in subsections 18.1 through 18.4 hereof exceed the Incurred Amount; and further provided that, if a greater amount of the Debt than the maximum liability set forth in this Section 18 could be secured by Pledgor as a result of an increase in Pledgor's Adjusted Net Worth subsequent to the date hereof, without rendering the rights to payment of Agent or the Banks hereunder void, voidable or avoidable under any applicable fraudulent transfer law, then the amount of Pledgor's maximum liability calculated in subsection 18.1 hereof shall be calculated based upon Pledgor's Adjusted Net Worth on such later date, rather than the date of execution of this Agreement.

19. Remedies Cumulative. All of the rights and remedies of Agent and the Banks with respect to the Collateral, whether established hereby or by the Documents, or by any other agreements or by law shall be cumulative and may be executed singularly or concurrently.

20. Severability. The provisions of this Agreement are severable, and, if any clause or provision shall be held invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Agreement in any jurisdiction.

21. Modifications. This Agreement may be amended or modified only by a writing signed by the parties hereto, except as provided in Section 16 above. In the event that any provision herein is deemed to be inconsistent with any provision of any other Documents (other than the Credit Agreement) relating to the Collateral, the provisions of this Agreement shall control.

22. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties, except that Pledgor may not assign any of its rights or duties hereunder without the prior written consent of Agent. Any attempted assignment or transfer without the prior written consent of Agent shall be null and void.

23. Notice. All notices, requests, demands and other communications provided for hereunder shall be in writing and, (a) if to Pledgor, mailed or delivered to it, addressed to it at the address specified on the signature page to this Agreement, (b) if to a Bank, mailed or delivered to it, addressed to the address of such Bank specified on the signature pages of the Credit Agreement, and (c) if to Agent, mailed or delivered to it, addressed to it at 2 PNC Plaza, 620 Liberty Avenue, 18th Floor, Pittsburgh, PA 15222, Attention: Richard Muse, Jr. All notices, statements, requests, demands and other communications provided for hereunder shall be deemed to be given or made when delivered by courier or forty-eight (48) hours after being deposited in the mails with postage prepaid by registered or certified mail, addressed as aforesaid, or sent by facsimile with telephonic confirmation of receipt, except that notices pursuant to any of the provisions hereof shall not be effective until received.

24. Governing Law/Jurisdiction. This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the State of Ohio, without regard to principles of conflicts of law. Pledgor hereby irrevocably submits to the non-exclusive jurisdiction of any Ohio state or federal court sitting in Cleveland, Ohio, over any action or proceeding arising out of or relating to this Agreement, any Loan Document or any Related Writing, and Pledgor hereby irrevocably agrees that all claims in respect of such action or proceeding may be heard and determined in such Ohio state or federal court. Pledgor hereby irrevocably waives, to the fullest extent permitted by law, any objection it may now or hereafter have to the laying of venue in any action or proceeding in any such court as well as any right it may now or hereafter have to remove such action or proceeding, once commenced, to another court on the grounds of FORUM NON CONVENIENS or otherwise. Pledgor agrees that a final, nonappealable judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

[Remainder of page intentionally left blank.]

25. JURY TRIAL WAIVER. PLEDGOR, AGENT AND THE BANKS, TO THE EXTENT PERMITTED BY LAW, EACH WAIVE ANY RIGHT TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE, AMONG AGENT, THE BANKS, AND PLEDGOR, OR ANY OF THEM, ARISING OUT OF, IN CONNECTION WITH, RELATED TO, OR INCIDENTAL TO THE RELATIONSHIP ESTABLISHED BETWEEN THEM IN CONNECTION WITH THIS AGREEMENT OR ANY NOTE OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION THEREWITH OR THE TRANSACTIONS RELATED THERETO. THIS WAIVER SHALL NOT IN ANY WAY AFFECT, WAIVE, LIMIT, AMEND OR MODIFY THE ABILITY OF ANY BANK TO PURSUE REMEDIES PURSUANT TO ANY CONFESSION OF JUDGMENT OR COGNOVIT PROVISION CONTAINED IN ANY NOTE, OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT AMONG PLEDGOR, BORROWER, AGENT AND THE BANKS, OR ANY OF THEM.

IN WITNESS WHEREOF, the undersigned has executed this Agreement as of the 21st day of May, 1999.

Address: 32000 Aurora Road
Solon, Ohio 44130

DEPOSITION SCIENCES, INC.

By: [Signature]
Title: Power of Attorney

PNC BANK, NATIONAL ASSOCIATION,
as Agent

By: [Signature]
Douglas K. Winget, Vice President

SCHEDULE A

May 21, 1999 11:07am -- JM5
CLEI: 249152 -- 359819 Ver9

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

SCHEDULE OF DEPOSITION SCIENCES, INC.'S PATENTS AND APPLICATIONS*

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	Patent 4,420,385	December 13, 1983
Deposition Sciences, Inc.	Method For Making Pigment Flakes	Patent 4,879,140	November 7, 1989
Deposition Sciences, Inc.	Photocell Array With Multi-spectral Filter	Patent 5,072,109	December 10, 1991
Deposition Sciences, Inc.	Method for Making Pigment Flakes	Patent 0 370 701B1 (Europe)	August 17, 1994
Deposition Sciences, Inc.	Multi-spectral Filter	Patent 5,164,858	November 17, 1992
Deposition Sciences, Inc.	Wear Resistant Transparent Dielectric Coatings	Patent 5,234,769	August 10, 1993
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	Patent 5,616,224	April 1, 1997
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96915638.9-1215/0824604	May 8, 1996

* Unless otherwise indicated in () in the third column, the patent information on this chart is for US. patents.

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96-534243 (Japan)	May 8, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	Patent 5,714,009	February 3, 1998
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96906164.7/ PCT/US96/00399 (Patent Cooperative Treaty)	January 11, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96-521819 (Japan)	January 11, 1996
Deposition Sciences, Inc.	Sputtering Device And Method For Reactive Sputtering	Patent 5,849,162	December 15, 1998
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US94/06908	June 17, 1994
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US96/05589	April 23, 1996
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	Patent EPO 516 436 B1	January 16, 1997

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Sputtering Device	S.N. 94921324.3/ PCT/US94/06908 (Patent Cooperative Treaty)	June 17, 1994
Deposition Sciences, Inc.	Sputtering Device	S.N. 96913025.1/ PCT/US96/05589 (Patent Cooperative Treaty)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S.N. 96906309.8- 2203/0809719 (Europe)	December 3, 1997
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S. N. 96/524999 (Japan)	February 5, 1996
Deposition Sciences, Inc.	An Optical Interference Coating Capable of Withstanding Severe Temperature Environments	S.N. PCT/US97/21834 (Patent Cooperative Treaty)	November 26, 1997
Deposition Sciences, Inc.	Method for Making Pigment Flakes	S.N. 300954/89 (Japan)	November 21, 1989

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

DEPOSITION SCIENCES, INC.'S SCHEDULE OF MARKS*

REGISTERED OWNER	MARK	U.S. REGISTRATION NO.
Deposition Sciences, Inc.	EASS	Reg. 2,076,076
Deposition Sciences, Inc.	HEAT BUSTER	Reg. 2,081,960
Deposition Sciences, Inc.	PASSION FIRE	Reg. 2,089,963
Deposition Sciences, Inc.	MICRODYN	Reg. 2,091,689
Deposition Sciences, Inc.	TAVALITE	Reg. 2, 163,889

* Unless otherwise indicated in () in the third column, the trademark information in this chart is for U.S. trademarks.

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
DEPOSITION SCIENCES, INC.'S LICENSES

LICENSOR	LICENSEE	SUBJECT MATTER	DATE OF AGREEMENT	TERM OF AGREEMENT
Deposition Sciences, Inc.	Cardinal IG	License for R&D work using Microwave applicator	August 25, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Hankuk Glass	License for R&D work using Microwave applicator	February 22, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Iwasaki	MR16 lamp coating	April 15, 1992	April 15, 2002 or upon last patent expiration
Deposition Sciences, Inc.	PPG	Ophthalmic Electrooptical coatings	May 28, 1996	May 28, 2006
Deposition Sciences, Inc.	Sola	AR coating of plastic lenses	July 12, 1995	July 12, 2005 or upon last patent expiration

COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

RECITALS:

Concurrently herewith, ADVANCED LIGHTING TECHNOLOGIES, INC., an Ohio corporation ("Borrower"), is entering into a Credit Agreement with the financial institutions listed on Schedule 1 to the Credit Agreement (collectively, together with their respective successors and assigns, "Banks" and individually, "Bank") and PNC BANK, NATIONAL ASSOCIATION, as agent for the Banks ("Agent") (the "Credit Agreement"). DEPOSITION SCIENCES, INC., an Ohio corporation, ("Pledgor") desires that the Banks grant the financial accommodations described in the Credit Agreement to Borrower.

Pledgor deems it to be in the direct pecuniary, commercial and business interests of Pledgor that Borrower obtain from the Banks the Commitment, as defined in the Credit Agreement, and the Loans and Letters of Credit, as hereinafter defined, provided for in the Credit Agreement.

Pledgor understands that the Banks are willing to grant such financial accommodations to Borrower only upon certain terms and conditions, one of which is that Pledgor grant to Agent, for the benefit of the Banks, a security interest in and an assignment of the Collateral, as hereinafter defined, and this Agreement (as the same may from time to time be amended, restated or otherwise modified, this "Agreement") is being executed and delivered in consideration of each financial accommodation, if any, granted to Borrower by the Banks and for other valuable considerations.

Except as specifically defined herein, all capitalized terms used herein that are defined in the Credit Agreement shall have their respective meanings ascribed to them in the Credit Agreement.

NOW, THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. Grant of Assignment and Security Interest. To secure Pledgor's guaranty of the Debt, as hereinafter defined, Pledgor hereby grants to Agent, for the benefit of the Banks, a security interest in, and assigns and conveys to Agent, for the benefit of the Banks, subject to Section 9 hereof, all of Pledgor's patents, patent applications, trademarks and all goodwill associated therewith, and trademark registrations, now owned and hereafter acquired, including, but not limited to, the patents, patent applications, trademark registrations, both federal and state, trademark applications, common law trademark rights, improvements, inventions, copyrights, and copyright registrations listed in Schedule A hereto and all goodwill associated therewith (as such Schedule A may be amended pursuant hereto from time to time, but only with the prior written consent of Agent), including, without limitation, all renewals thereof, all proceeds on infringement suits, the right to sue for past, present and future infringements and all rights corresponding thereto throughout the world, and the goodwill of the business to which each of the trademarks relate (all of the foregoing collectively

referred to herein as the "Collateral"). Schedule A is incorporated into and made a part of this Agreement by reference, the same as if it were fully set forth herein.

2. Obligations Secured. The obligations secured by this Agreement (collectively, the "Debt") for the payment and performance of, collectively, (a) any indebtedness arising under the Guaranty of Payment, as defined in the Credit Agreement, executed by Pledgor in favor of Agent of even date herewith; (b) each renewal, extension, consolidation or refinancing of any of the foregoing, in whole or in part; and (c) all interest from time to time accruing on any of the foregoing.

3. Warranties and Representations. Pledgor represents and warrants to Agent and the Banks that each of the following statements is true and complete:

(a) Pledgor owns the Collateral and, whether the same are registered or unregistered, no such Collateral has been adjudged invalid or unenforceable.

(b) The Collateral is valid and enforceable.

(c) Pledgor has no knowledge of any claim that the use of any of the Collateral does or may violate the rights of any third person.

(d) Except for the liens granted in this Agreement or permitted by the Credit Agreement, Pledgor is the sole and exclusive owner of the entire and unencumbered right, title and interest in and to the Collateral, free and clear of any liens, charges and encumbrances, including, without limitation, pledges, assignments, licenses, registered user agreements and covenants by Pledgor not to sue third persons.

(e) Pledgor has full power, authority and legal right to pledge the Collateral and enter into this Agreement and perform its terms.

(f) Pledgor has used, and will continue to use, for the duration of this Agreement, proper statutory notice in connection with its use of the Collateral, except where the failure to do so will not have a material adverse effect.

4. Right to Use. Unless and until there shall have occurred an Event of Default (as that term is defined in Section 8 of this Agreement), Agent, on behalf of the Banks, to the extent permitted by law, hereby grants to Pledgor the exclusive, royalty-free, world-wide, nontransferable right and license to use the Collateral, including without limitation the right to act in the normal course of business with respect to the protection, renewal, maintenance or perfection, on and in connection with products manufactured, distributed, or both by or in connection with products sold by Pledgor, for Pledgor's sole benefit and account and for none other. Pledgor shall not enter into any agreement that is inconsistent with Pledgor's obligations under this Agreement and shall not otherwise sell or assign its interest in, or grant any sublicense under, the license granted to Pledgor hereunder, except in the ordinary course of business, without Agent's prior written consent. Absent such prior written consent, any attempted sale or license is null and void.

5. Right to Inspect. Pledgor hereby grants to Agent and its employees and agents the right, during regular business hours and upon reasonable notice, to visit Pledgor's plants and facilities or the plants and facilities of any subcontractors that manufacture, inspect, sell or store products sold under any of the Collateral, and to inspect the products and quality control records relating thereto at reasonable times during regular business hours, at Pledgor's expense.

6. Standard Patent and Trademark Use. Pledgor shall not use the Collateral in any manner that would jeopardize the validity or legal status thereof. Pledgor shall comply with all patent marking requirements as specified in 35 U.S.C. §287. Pledgor shall further conform its usage of any trademarks to standard trademark usage, including, but not limited to, using the trademark symbols ®, ™, and ™ where appropriate.

7. Event of Default.

(a) The occurrence of any of the following shall constitute an "Event of Default" under this Agreement:

(i) If an Event of Default, as defined in the Credit Agreement, shall occur under the Credit Agreement; or

(ii) If Pledgor shall fail to perform any obligation of Pledgor to be performed under this Agreement and the same shall not have been fully corrected within twenty (20) days after the giving of written notice thereof to Pledgor by Agent or any Bank.

(b) If any Event of Default shall have occurred, Pledgor irrevocably authorizes and empowers Agent, on behalf of the Banks, to terminate Pledgor's use of the Collateral and to exercise such rights and remedies as allowed by law. Without limiting the generality of the foregoing, Agent may immediately sell at public or private sale, in a commercially reasonable manner, or otherwise realize upon all or, from time to time, any of the Collateral together with the associated goodwill, or any interest that Pledgor may have therein, and, after deducting from the proceeds of sale or other disposition of the Collateral all reasonable expenses (including all expenses for attorneys' and brokers' fees and other legal services), Agent shall apply the residue of such proceeds against payment of the Debt. Any remainder of the proceeds, after payment in full of the Debt, shall be distributed in accordance with the Chapter 1309 of the Ohio Revised Code. Notice of any sale or other disposition of the Collateral shall be given to Pledgor at least five (5) business days before the time of any intended public or private sale or other disposition of the Collateral is to be made, which Pledgor hereby agrees shall be reasonable notice of such sale or other disposition. At any such sale or other disposition, Agent or any Bank may, to the extent permissible under applicable law, purchase the whole or any part of the Collateral sold, free from any right of redemption on the part of Pledgor, which right is hereby waived and released.

8. Termination. At such time as the Debt has been irrevocably paid in full, the Commitment, as defined in the Credit Agreement, terminated, and the Credit Agreement terminated and not replaced by any other credit facility with Agent and the Banks, this Agreement shall terminate and Agent shall execute and deliver to Pledgor all deeds, assignments, and other

instruments as may be necessary or proper to release Agent's security interest in and assignment of the Collateral and to re-vest in Pledgor full title to the Collateral, subject to any disposition thereof that may have been made by Agent pursuant hereto.

9. Maintaining Collateral, Attorneys' Fees, Costs and Expenses. Pledgor shall have the obligation and duty to perform all acts necessary to maintain or preserve the Collateral, provided that Pledgor shall not be obligated to maintain any Collateral in the event Pledgor determines, in the reasonable business judgment of Pledgor, that the maintenance of such Collateral is no longer necessary in Pledgor's business. Any and all reasonable fees, costs and expenses, of whatever kind or nature, including, without limitation, the attorneys' fees and legal expenses incurred by Agent and the Banks in connection with the amendment and enforcement of this Agreement, all renewals, required affidavits and all other documents relating hereto and the consummation of this transaction, the filing or recording of any documents (including all taxes in connection therewith) in public offices, the payment or discharge of any taxes, counsel fees, maintenance fees, encumbrances or otherwise protecting, maintaining or preserving the Collateral, or in defending or prosecuting any actions or proceedings arising out of or related to the Collateral, shall be borne and paid by Pledgor, upon demand by Agent, and, until so paid, shall be added to the principal amount of the Debt.

10. Pledgor's Obligations to Prosecute. Except as otherwise agreed to by Agent in writing, Pledgor shall have the duty to prosecute diligently any patent application or trademark application pending as of the date of this Agreement or thereafter until the Debt shall have been paid in full, to file and prosecute opposition and cancellation proceedings and to do any and all acts that are necessary or desirable to preserve and maintain all rights in the Collateral, including, but not limited to, payment of any maintenance fees. Any expenses incurred in connection with the Collateral shall be borne by Pledgor. Pledgor shall not abandon any Collateral without the prior written consent of Agent, unless such abandonment will not have a material adverse effect on Pledgor or such abandonment is in connection with the abandonment of a product or product line.

11. Agent's Rights to Enforce. Pledgor shall have the right to bring any opposition proceedings, cancellation proceedings or lawsuit in its own name to enforce or protect the Collateral. Agent and the Banks shall have the right, but shall have no obligation, to join in any such action. Pledgor shall promptly, upon demand, reimburse and indemnify Agent and the Banks for all damages, reasonable costs and expenses, including attorneys' fees incurred by Agent in connection with the provisions of this Section 11, in the event Agent and the Banks elect to join in any such action commenced by Pledgor.

12. Power of Attorney. Pledgor hereby authorizes and empowers Agent, on behalf of the Banks, to make, constitute and appoint any officer or agent of Agent as Agent may select, in its exclusive discretion, as Pledgor's true and lawful attorney-in-fact, with the power to endorse, after the occurrence of an Event of Default, Pledgor's name on all applications, documents, papers and instruments necessary for Agent to use the Collateral, or to grant or issue any exclusive or nonexclusive license under the Collateral to any third party, or necessary for Agent to assign, pledge, convey or otherwise transfer title in or dispose of the Collateral, together with associated goodwill to a third party or parties. Pledgor hereby ratifies all that such attorney shall lawfully do or cause

to be done by virtue hereof. This power of attorney shall be irrevocable for the life of this Agreement.

13. Agent's Right to Perform Obligations. If Pledgor fails to comply with any of its obligations under this Agreement, Agent, on behalf of the Banks, may, but is not obligated to, do so in Pledgor's name or in Agent's name, but at Pledgor's expense, and Pledgor hereby agrees to reimburse Agent on demand in full for all expenses, including attorneys' fees, incurred by Agent in protecting, defending and maintaining the Collateral.

14. Additional Documents. Pledgor shall, upon written request of Agent, enter into such additional documents or instruments as may be required by Agent in order to effectuate, evidence or perfect Agent's interests in the Collateral as evidenced by this Agreement.

15. New Collateral. If, before the Debt shall have been satisfied in full, Pledgor shall obtain rights to any new Collateral, the provisions of Section 1 shall automatically apply thereto as if the same were identified on Schedule A as of the date hereof and Pledgor shall give Agent prompt written notice thereof.

16. Modification for New Collateral. Pledgor hereby authorizes Agent to modify this Agreement by amending Schedule A to include any future Collateral as contemplated by Sections 1 and 16 hereof and, at Agent's request, Pledgor shall execute any documents or instruments required by Agent in order to modify this Agreement as provided in this Section 16, provided that any such modification to Schedule A shall be effective without the signature of Pledgor.

17. No Waiver. No course of dealing between Pledgor and Agent and the Banks, nor any failure to exercise, nor any delay in exercising, on the part of Agent or the Banks, any right, power or privilege hereunder, under any of the Loan Documents, or any other document executed in connection with any of the foregoing ("Documents") shall operate as a waiver thereof; nor shall any single or partial exercise of any right, power or privilege hereunder or thereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

18. **MAXIMUM LIABILITY OF PLEDGOR.**

18.1. Pledgor's Liability Limited in Amount. Subject to subsection 18.5 hereof, but otherwise notwithstanding anything to the contrary contained in this Agreement, the maximum amount of the Debt secured by this Agreement shall not exceed the sum of (a) that portion of the Loans and Letters of Credit the proceeds of which are used by Borrower to make Valuable Transfers (as hereinafter defined) to Pledgor, plus (b) ninety-five percent (95%) of the Adjusted Net Worth (as hereinafter defined), but only to the extent that the Adjusted Net Worth is a positive number, of Pledgor at the date of this Agreement.

18.2. Definition of Terms Used in Section 18. For purposes of this Section 18:

"Adjusted Net Worth" shall mean, as of any date of determination thereof, the excess of (a) the amount of the fair saleable value (or fair valuation, if relevant under applicable law) of the

assets of Pledgor as of the date of such determination, determined in accordance with applicable federal and state laws governing determinations of insolvency of debtors, over (b) the amount of all liabilities of Pledgor, contingent or otherwise, as of the date of such determination, determined in accordance with applicable federal and state law as referenced in the preceding clause (a), and in all events prior to giving effect to Valuable Transfers.

“Incurred Amount” shall mean the maximum amount for which Pledgor may be liable under this instrument (after giving effect to the incurring of the obligations under this instrument and to any rights to contribution of Pledgor from other affiliates of Borrower) without rendering the rights to payment hereunder of Agent void, voidable or avoidable under any applicable fraudulent transfer law.

“Valuable Transfer” shall mean (a) all loans, advances or capital contributions made to Pledgor with proceeds of the Loans and Letters of Credit; (b) the fair market value of all property acquired with proceeds of the Loans and Letters of Credit and transferred to Pledgor; (c) the interest on and the fees in respect of the Loans and the Letters of Credit, the proceeds of which are used to make such a Valuable Transfer; and (d) the value of any quantifiable economic benefits not included in clauses (a) through (c) above, but includable in accordance with applicable federal and state laws governing determinations of the insolvency of debtors, accruing to Pledgor as a result of the Loans and Letters of Credit.

18.3. Debt May Exceed Pledgor's Maximum Liability. Pledgor agrees that the Debt may at any time and from time to time exceed the maximum amount of the Debt secured by this Agreement without impairing this Agreement or affecting the rights and remedies of Agent or the Banks hereunder.

18.4. Pledgor's Liability Not Reduced by Payments by Others. No payment or payments made by Borrower, Pledgor or any other Person or received or collected by Agent or the Banks from Borrower, Pledgor or any other Person by virtue of any action or proceeding or any set-off or appropriation or application at any time or from time to time in reduction of or in payment of the Debt shall be deemed to modify, reduce, release or otherwise affect the amount of the Debt secured by this Agreement and this Agreement shall, notwithstanding any such payment or payments (other than payments made to Agent or the Banks by Pledgor or payments received or collected by Agent or the Banks from Pledgor), secure the Debt up to the maximum amount of the Debt secured by this Agreement as set forth above until the Debt is indefeasibly paid in full in cash.

18.5. Adjustments to Maximum Liability. Anything in this Section 18 to the contrary notwithstanding, in no event shall the amount of the Debt secured by this Agreement as set forth in subsections 18.1 through 18.4 hereof exceed the Incurred Amount; and further provided that, if a greater amount of the Debt than the maximum liability set forth in this Section 18 could be secured by Pledgor as a result of an increase in Pledgor's Adjusted Net Worth subsequent to the date hereof, without rendering the rights to payment of Agent or the Banks hereunder void, voidable or avoidable under any applicable fraudulent transfer law, then the amount of Pledgor's maximum liability calculated in subsection 18.1 hereof shall be calculated based upon Pledgor's Adjusted Net Worth on such later date, rather than the date of execution of this Agreement.

19. Remedies Cumulative. All of the rights and remedies of Agent and the Banks with respect to the Collateral, whether established hereby or by the Documents, or by any other agreements or by law shall be cumulative and may be executed singularly or concurrently.

20. Severability. The provisions of this Agreement are severable, and, if any clause or provision shall be held invalid and unenforceable in whole or in part in any jurisdiction, then such invalidity or unenforceability shall affect only such clause or provision, or part thereof, in such jurisdiction, and shall not in any manner affect such clause or provision in any other jurisdiction, or any other clause or provision of this Agreement in any jurisdiction.

21. Modifications. This Agreement may be amended or modified only by a writing signed by the parties hereto, except as provided in Section 16 above. In the event that any provision herein is deemed to be inconsistent with any provision of any other Documents (other than the Credit Agreement) relating to the Collateral, the provisions of this Agreement shall control.

22. Successors and Assigns. This Agreement shall inure to the benefit of and be binding upon the respective successors and permitted assigns of the parties, except that Pledgor may not assign any of its rights or duties hereunder without the prior written consent of Agent. Any attempted assignment or transfer without the prior written consent of Agent shall be null and void.

23. Notice. All notices, requests, demands and other communications provided for hereunder shall be in writing and, (a) if to Pledgor, mailed or delivered to it, addressed to it at the address specified on the signature page to this Agreement, (b) if to a Bank, mailed or delivered to it, addressed to the address of such Bank specified on the signature pages of the Credit Agreement, and (c) if to Agent, mailed or delivered to it, addressed to it at 2 PNC Plaza, 620 Liberty Avenue, 18th Floor, Pittsburgh, PA 15222, Attention: Richard Muse, Jr. All notices, statements, requests, demands and other communications provided for hereunder shall be deemed to be given or made when delivered by courier or forty-eight (48) hours after being deposited in the mails with postage prepaid by registered or certified mail, addressed as aforesaid, or sent by facsimile with telephonic confirmation of receipt, except that notices pursuant to any of the provisions hereof shall not be effective until received.

24. Governing Law/Jurisdiction. This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the State of Ohio, without regard to principles of conflicts of law. Pledgor hereby irrevocably submits to the non-exclusive jurisdiction of any Ohio state or federal court sitting in Cleveland, Ohio, over any action or proceeding arising out of or relating to this Agreement, any Loan Document or any Related Writing, and Pledgor hereby irrevocably agrees that all claims in respect of such action or proceeding may be heard and determined in such Ohio state or federal court. Pledgor hereby irrevocably waives, to the fullest extent permitted by law, any objection it may now or hereafter have to the laying of venue in any action or proceeding in any such court as well as any right it may now or hereafter have to remove such action or proceeding, once commenced, to another court on the grounds of FORUM NON CONVENIENS or otherwise. Pledgor agrees that a final, nonappealable judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

[Remainder of page intentionally left blank.]

25. JURY TRIAL WAIVER. PLEDGOR, AGENT AND THE BANKS, TO THE EXTENT PERMITTED BY LAW, EACH WAIVE ANY RIGHT TO HAVE A JURY PARTICIPATE IN RESOLVING ANY DISPUTE, WHETHER SOUNDING IN CONTRACT, TORT OR OTHERWISE, AMONG AGENT, THE BANKS, AND PLEDGOR, OR ANY OF THEM, ARISING OUT OF, IN CONNECTION WITH, RELATED TO, OR INCIDENTAL TO THE RELATIONSHIP ESTABLISHED BETWEEN THEM IN CONNECTION WITH THIS AGREEMENT OR ANY NOTE OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT EXECUTED OR DELIVERED IN CONNECTION THEREWITH OR THE TRANSACTIONS RELATED THERETO. THIS WAIVER SHALL NOT IN ANY WAY AFFECT, WAIVE, LIMIT, AMEND OR MODIFY THE ABILITY OF ANY BANK TO PURSUE REMEDIES PURSUANT TO ANY CONFESSION OF JUDGMENT OR COGNOVIT PROVISION CONTAINED IN ANY NOTE, OR OTHER INSTRUMENT, DOCUMENT OR AGREEMENT AMONG PLEDGOR, BORROWER, AGENT AND THE BANKS, OR ANY OF THEM.

IN WITNESS WHEREOF, the undersigned has executed this Agreement as of the 21st day of May, 1999.

Address: 32000 Aurora Road
Solon, Ohio 44130

DEPOSITION SCIENCES, INC.

By: [Signature]
Title: Power of Attorney

PNC BANK, NATIONAL ASSOCIATION,
as Agent


By: [Signature]
Douglas K. Winger, Vice President

ACKNOWLEDGMENTS

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Nicholas R. Sucic, known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said Deposition Sciences, Inc., an Ohio corporation, and that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

THE STATE OF OHIO)
) SS:
COUNTY OF CUYAHOGA)

BEFORE ME, the undersigned authority, on this day personally appeared Douglas K. Winget known to me to be the person and officer whose name is subscribed to the foregoing instrument and acknowledged to me that the same was the act of the said PNC BANK, NATIONAL ASSOCIATION, a national banking association, and that he executed the same as the act of such national banking association for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this 21st day of May, 1999.


~~NOTARY PUBLIC~~
JOHN E. MAZEY NOTARY PUBLIC
State of Ohio
My Commission Has No Expiration

SCHEDULE A

May 21, 1999 11:07am -- JM5
CLE1: 249152 -- 359819 Ver9

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

SCHEDULE OF DEPOSITION SCIENCES, INC.'S PATENTS AND APPLICATIONS*

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	Patent 4,420,385	December 13, 1983
Deposition Sciences, Inc.	Method For Making Pigment Flakes	Patent 4,879,140	November 7, 1989
Deposition Sciences, Inc.	Photocell Array With Multi-spectral Filter	Patent 5,072,109	December 10, 1991
Deposition Sciences, Inc.	Method for Making Pigment Flakes	Patent 0 370 701B1 (Europe)	August 17, 1994
Deposition Sciences, Inc.	Multi-spectral Filter	Patent 5,164,858	November 17, 1992
Deposition Sciences, Inc.	Wear Resistant Transparent Dielectric Coatings	Patent 5,234,769	August 10, 1993
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	Patent 5,616,224	April 1, 1997
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96915638.9- 1215/0824604	May 8, 1996

* Unless otherwise indicated in () in the third column, the patent information on this chart is for U.S. patents.

15547.1 Ex. A to Collateral Assign/Sec Agreement-DSI

TRADEMARK
REEL: 001963 FRAME: 0454

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Apparatus For Reducing The Intensity And Frequency Of Arcs Which Occur During A Sputtering Process	S.N. 96-534243 (Japan)	May 8, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	Patent 5,714,009	February 3, 1998
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96906164.7/ PCT/US96/00399 (Patent Cooperative Treaty)	January 11, 1996
Deposition Sciences, Inc.	Application For Generating Large Distributed Plasmas By Means Of Plasma-guided Microwave Power	S.N. 96-521819 (Japan)	January 11, 1996
Deposition Sciences, Inc.	Sputtering Device And Method For Reactive Sputtering	Patent 5,849,162	December 15, 1998
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US94/06908	June 17, 1994
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. PCT/US96/05589	April 23, 1996
Deposition Sciences, Inc.	Apparatus And Process For Sputter Deposition Of Reacted Thin Films	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	Patent EPO 516 436 B1	January 16, 1997

**Exhibit A to Collateral Assignment and Security Agreement
Schedule of DSI's Patents and Applications (Cont'd)**

OWNER	TITLE	PATENT NO. OR APPLICATION SERIAL NO.	PATENT ISSUE DATE OR APPLICATION FILING DATE
Deposition Sciences, Inc.	Sputtering Device	S.N. 94921324.3/ PCT/US94/06908 (Patent Cooperative Treaty)	June 17, 1994
Deposition Sciences, Inc.	Sputtering Device	S.N. 96913025.1/ PCT/US96/05589 (Patent Cooperative Treaty)	April 23, 1996
Deposition Sciences, Inc.	Sputtering Device	S.N. 96-532634 (Japan)	April 23, 1996
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S.N. 96906309.8- 2203/0809719 (Europe)	December 3, 1997
Deposition Sciences, Inc.	Apparatus and Method for a Reliable Return Current Path for Sputtering Processes	S. N. 96/524999 (Japan)	February 5, 1996
Deposition Sciences, Inc.	An Optical Interference Coating Capable of Withstanding Severe Temperature Environments	S.N. PCT/US97/21834 (Patent Cooperative Treaty)	November 26, 1997
Deposition Sciences, Inc.	Method for Making Pigment Flakes	S.N. 300954/89 (Japan)	November 21, 1989

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT

DEPOSITION SCIENCES, INC.'S SCHEDULE OF MARKS*

REGISTERED OWNER	MARK	U.S. REGISTRATION NO.
Deposition Sciences, Inc.	EASS	Reg. 2,076,076
Deposition Sciences, Inc.	HEAT BUSTER	Reg. 2,081,960
Deposition Sciences, Inc.	PASSION FIRE	Reg. 2,089,963
Deposition Sciences, Inc.	MICRODYN	Reg. 2,091,689
Deposition Sciences, Inc.	TAVALITE	Reg. 2, 163,889

* Unless otherwise indicated in () in the third column, the trademark information in this chart is for U.S. trademarks.

EXHIBIT A
to
COLLATERAL ASSIGNMENT AND SECURITY AGREEMENT
DEPOSITION SCIENCES, INC.'S LICENSES

LICENSOR	LICENSEE	SUBJECT MATTER	DATE OF AGREEMENT	TERM OF AGREEMENT
Deposition Sciences, Inc.	Cardinal IG	License for R&D work using Microwave applicator	August 25, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Hankuk Glass	License for R&D work using Microwave applicator	February 22, 1994	Indefinite - NDA clause, 10 years
Deposition Sciences, Inc.	Iwasaki	MR16 lamp coating	April 15, 1992	April 15, 2002 or upon last patent expiration
Deposition Sciences, Inc.	PPG	Ophthalmic Electrooptical coatings	May 28, 1996	May 28, 2006
Deposition Sciences, Inc.	Sola	AR coating of plastic lenses	July 12, 1995	July 12, 2005 or upon last patent expiration