

Curriculum Vitae of Richard A. Flasck

My forty-three year career has involved high tech product development, intellectual property (IP) issues, projection displays, lens and optical system design, thin film optical filters, non-imaging optics, LCD flat panel displays and modules, backlighting of flat panel displays, light emitting diode (LED) product development, injection molding, chip-on-board development, and High Definition Television (HDTV) systems.

I am an inventor on twenty-five patents (both US and foreign), including one US design patent. I have concluded several licensing agreements, demonstrating both technical innovation and expertise in Intellectual Property (IP) issues. Additionally, on several occasions I have testified before the US International Trade Commission and in US District Court as an expert witness on display technology.

I am also an author of twenty-three (24) published papers and conference presentations.

Education

- 1970 BS – Physics University of Michigan (Ann Arbor, MI)
- 1976 MS – Physics Oakland University (Rochester, MI)

Employment

- 1989 – Present
 - Organization: RAF Electronics Corp.
 - Position: Founder and CEO
 - Developed, patented, and licensed Liquid Crystal on Silicon (LCOS) microdisplay technology. Engaged in development and patent prosecution of proprietary LED based Solid State Lighting (SSL) products. Etendue limited optics, non-imaging and hybrid optics, thermal management, layout and electronic drive of LED arrays. Expertise in semiconductor IC's, Active Matrix Liquid Crystals Displays (AMLCD), thin films, optics, and video electronics. Optics and electronics manufacturing, technical consulting and independent testifying expert witness work in numerous patent lawsuits.
- 2002-2007
 - Organization: Diablo Optics, Inc.
 - Position: Co-founder and COO
 - Development, production and commercialization of key optical components for HDTV projectors. Polarization optics, condenser lenses, projection lenses, ultra-high performance optical thin film stacks. Established, and managed international supply chain. Developed domestic and international customers.

- 1997 – 1999
 - Organization: Alien Technology Corporation
 - Position: President and COO
 - Responsible for successful MEM fluidic self-assembly (FSA) technology implementation and completion of a DARPA contract. Managed company growth from a four-person start-up to a VC funded twenty person operation. Cleanroom, photolith, thin film deposition (back-end) semiconductor processing.

- 1982-1989
 - Organization: Alphasil, Inc.
 - Position: Founder and CEO
 - Pioneered amorphous silicon thin film transistor (TFT) active matrix Liquid Crystal Displays (AMLCD). World's first amorphous silicon TFT LCD pilot line in 1986. TFT process and circuit design, data driver and gate driver design, scalars, video circuits, backlighting, and inverter design.

- 1970 – 1982
 - Organization: Energy Conversion Devices, Inc.
 - Position: Scientist, Manager
 - Originated, managed, developed, and licensed several high tech products including thin film photovoltaics, ablative imaging films, EEPROMs, multi-chip modules, and superconducting materials.

Professional Affiliations

- Member - SPIE, OSA, SID, IEEE, AES
- Co-Chairman – SPIE/ IS&T Symposium on Electronic Imaging (1991 and 1992)
- Current Board Member - RAF Electronics Corp.
- Former Board Member - Alphasil, Inc., Somanetics Corporation, Diablo Optics, Inc.

Testifying Expert Witness Experience in Patent Litigation

Date 2006 - 2007
Law Firm Bingham McCutchen LLP
Client Defendant - Seoul Semiconductor Company, Inc.
Case Nichia Corporation v. Seoul Semiconductor
3:06-cv-0162 United States District Court, Northern District of California
Services Expert witness, reports, trial testimony

Date 2007-2008
Law Firm Orrick, Herrington & Sutcliffe LLP
Client Respondent - Acer Incorporated and Acer America Corporation
Case Hewlett Packard v. Acer Incorporated et al.
U. S. International Trade Commission Investigation No. 337-TA-606
Services Expert witness, reports, ITC hearing testimony

Date 2008
Law Firm Fish & Richardson P.C.
Client Complainant - Samsung
Case Samsung v Sharp
U. S. International Trade Commission Investigation No. 337-TA-631
Services Expert witness, ITC hearing testimony

Date 2008 - 2009
Law Firm Fish & Richardson P.C.
Client Respondent - Samsung
Case Sharp v Samsung
U. S. International Trade Commission Investigation No. 337-TA-634
Services Expert witness, reports, ITC hearing testimony

Date 2008 - 2009
Law Firm Howrey LLP
Client Complainant - O2Micro
Case O2Micro v Monolithic Power Systems, MicroSemi
U. S. International Trade Commission Investigation No. 337-TA-666
Services Expert witness, reports, ITC hearing testimony

Patents & Patent Applications

<u>Patent</u>	<u>Date</u>	<u>Description</u>
6,266,037	7/24/01	Wafer Based Active Matrix
700353/1991	8/19/99	Wafer Based Active Matrix
0438565B1	6/4/97	Wafer Based Active Matrix
5,123,847	6/23/92	Method of Manufacturing Flat Panel Back Planes, Display Transistors
5,108,172	4/28/92	An Improved Active Matrix Reflective Image Plane Module and Projection System
UM-68958	2/21/92	Wafer Based Active Matrix
5,024,524	6/18/91	Reflective Image Plane Module
UM-67108	12/14/91	An Active Matrix Reflective Projection Apparatus
D320,403	10/1/91	Liquid Crystal Screen for Overhead Projector
5,022,750	6/11/91	An Active Matrix Reflective Projection System
4,842,378	6/27/89	Method of illuminating Flat Panel Displays to Provide CRT Appearing Displays
4,820,222	4/11/89	Method of manufacturing Flat Panel Backplanes Including Improved Testing and Yields Thereof and Displays Made Thereby
4,736,229	4/5/88	Method of Manufacturing Flat Panel Backplanes, Display Transistors and Displays Made Thereby
4,651,185	3/17/87	Method of Manufacturing Thin Film Transistors and Transistors Made Thereby
4,599,705	7/8/86	Programmable Cell for Use in Programmable Electronic Arrays
4,545,112	10/8/85	Method of Manufacturing Thin Film Transistors and Transistors Made Thereby
4,499,557	2/12/85	Programmable Cell for Use in Programmable Electronic Arrays: Doped Amorphous Silicon Alloy
4,458,297	7/3/84	Universal Interconnect Substrate
4,339,255	7/13/82	Method and Apparatus for Making Modified Amorphous Glass Materials
4,332,466	6/1/82	Apparatus for Producing Microform Records at High Speed from Computer or Other Electronic Data Signal Sources
FR2489843A1	3/12/82	Apparatus and Method for Producing Amorphous Modified Glass
GB2083455A	9/7/81	Spinning Ribbons of Metallic, Dielectric, and Semiconductor Modified Amorphous Glass Materials
4,170,728	10/9/79	Heat Applying Microfilm Recording Apparatus
3,983,076	9/28/76	N-Type Amorphous Semiconductor Materials: Chalcogenides
DE2429507	1/23/75	N Conductivity Amorphous Semiconductor Material

Papers and Conference Presentations

1. Richard Flasck, "Ultra High Efficiency Beam Forming Solid State Lighting Luminaires", SAIC Non-Imaging Optics Workshop, La Jolla, CA, August 24, 2013
2. Richard Flasck, "Ultra High Efficiency Beam Forming Solid State Lighting Luminaires", Society for Information Display Conference, Boston, June 7, 2012.
3. R. Flasck, "Design, Production, and Application of High Performance Dichroic Coatings - One Step Beyond the Cutting Edge - ", presented at the SAIC Non-Imaging Optics Workshop, La Jolla, CA, August 25, 2007
4. R. Flasck, "The Critical Role of Optical Interference Coatings in High Brightness - Etendue Limited Systems Such as HDTV Projectors", at The 2007 Optical Interference Coatings Topical Meeting and Tabletop Exhibit, Optical Society of America, June 7, 2007.
5. R. Flasck, "X-Cubes - Revisited for LCOS", Bay Area Society for Information Display Meeting, October 24, 2002
6. R. Flasck, "The Care and Feeding of Single Crystal Silicon Light Valve Design," Society for Information Display FPD Strategic and Technical Symposium, September 9-10, 1998.
7. R. Flasck, "The Care and Feeding of Single Crystal Silicon Light Valve Design," Stanford Resources 1998 Display Conference
8. R. Flasck, and E. Rawson, "High Optical Efficiency PDLC/CMOS Projection Systems," IC Expo/WESCON 1996
9. R. Flasck, "Current and Near Term Applications of Flat Panel Display Devices," Applications of Electronic Imaging; John Urbach, Editor; Proceedings of SPIE, Vol 1082 (1989). - Invited Critical Review Paper
10. R. Flasck, "U.S. Display Suppliers and Developers: Comments on Developments and Manufacturing," Flat Panel Displays 1988 Conference and Exhibition; Stanford Resources, Inc. (1988). - Invited Presentation and Expert Panel Member
11. S. Ladderman, A. Bienenstock, R. Flasck, and F. Betts, "Structural Studies of Sputtered Ni-As-O Films," Journal of Non-Crystalline Solids, Vol 70, Num 3, 409-427 (1985).
12. R. Flasck, and S. Holmberg, "Amorphous Silicon Thin Film Transistor (TFT) Driven Liquid Crystal Displays (LCD)," Advances in Display Technology V, Elliott Schlam, Editor, Proceedings of SPIE, Vol 526, 94-98 (1985).
13. S. Ovshinski, K. Sapru, and R. Flasck, "Modification of SiO₂," Bulletin of the American Physical Society, Vol 23, Num 3, 461 (1978).
14. R. Flasck, M. Izu, K. Sapru, T. Anderson, S. Ovshinski, and H. Fritzsche, "Optical and Electronic Properties of Modified Amorphous Materials," Proceedings of the Seventh International Conference on Amorphous and Liquid Semiconductors, University of Edinburgh, Scotland, 527-528 (1977).

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