

Brian Hoekstra

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Director, Business Development

U.S. Sales Representative

Research & Manufacturing Partner

Business executive with diverse engineering, sales, and supply chain experience in the laser, display, semiconductor, medical, electronics, and space industries. Technology innovator with expertise in precision laser micromachining, materials science, and device manufacturing. Proven leader in high end laser system sales and marketing, business development, network building, strategic partnerships, and bringing groundbreaking precision laser processes into mass production. Entrepreneurial mindset with hands-on knowledge in business management, strategic planning, roadmaps and team building. Oversaw the design and development of next-generation technologies to facilitate business growth, such as touch screen innovations that enabled the smart phone revolution. Project manager for several NASA space shuttle materials science experiments and technical lead for SDIO (Star Wars) projects during the Reagan administration. Completed French language exchange program at the US Air Force Academy and served as liaison between NASA and the Canadian Space Agency. Trained pilot, flight test engineer, and veteran.

Areas of Expertise

- Business Development
- Sales Management
- Strategic Partnerships
- Project/Budget Management
- Strategic Business Planning
- Lasers Physics & Materials Science
- Laser Micromachining
- Ultrashort pulse lasers
- Excimer lasers
- Process Design/Engineering
- Key Client Relations
- Sales Growth Initiatives
- Mergers and Acquisitions (M&A)
- Sales and Marketing
- International Business

Professional Experience

LASEA, Inc, El Cajon, CA

December 2024 – Present

Director of Sales, Americas

Lead US Sales Team to provide laser micromachining systems for manufacturing of medical devices, luxury products, and electronics. Coordinate with colleagues in Belgium, France and Switzerland to support North and South American customers.

- Identify, design, develop, market, and support next-generation laser, medtech, and materials technologies.

3D-Micromac AG/3D-Micromac, LLC, Chemnitz, Germany and San Jose, CA

July 2014 – June 2023

President | General Manager

Directed U.S. distribution operations for this leading supplier of laser micromachining systems used in the manufacturing of micro-LED displays, semiconductors, photovoltaics, aerospace, and electronic components.

- Provided superior post-sales service and support to the North American market by providing access to high-precision laser workstations and micro-diagnostics.
- Contributed to laser process development via collaborative efforts with U.S. companies and research institutions including micro-LEDs, semiconductors, flexible substrates, medical devices, displays, and materials micromachining.

Solavera Development Group, Scottsdale, AZ and Carmel, CA

December 2009 – Present

Managing Partner

Investment holding company comprised of 3D Capital Partners, LLC and Solavera Development, LLC.

- Manage a private equity and intellectual property portfolio with a focus on laser capital equipment and medtech.

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Applied Photonics, Inc. (acquired by ESI, NASDAQ: MKSI), Scottsdale, AZ
Founder | Chief Executive Officer | Chief Technology Officer

September 1999 – November 2009

Established this company to design, develop, and provide laser systems to the emerging flat panel display industry.

- Commercialized laser glass cutting for liquid crystal displays (LCDs) and laser ID marking of cell phones.
- Served as Principal Scientist for LCD laser cutting project, chemically strengthened iPhone touch panels, picosecond laser marking of two-dimensional matrix barcodes, and excimer laser annealing.
- Patented several factory processes related to the production of semiconductors, glass, sapphire, and solar panels.
- Directed North American and overseas sales and operations in Japan, South Korea, Taiwan, China, and Germany.

National Aeronautics and Space Administration (NASA) Center for the Commercial Development of Space, Washington, DC
Deputy Director | Co-Founder

Managed this commercial consortium specializing in microgravity crystal growth. Oversaw several space shuttle microgravity projects utilizing melt, vapor and solution growth methods for CdTe, GaAs, and Zeolites.

- Coordinated and oversaw research projects at several universities (RPI, Florida, WPI, Alabama A&M, Clarkson, NIST), and corporations (Rockwell, Grumman, Westinghouse, Boeing, Spacehab, Teledyne, & II-VI Inc).
- Served as the DoD microgravity science expert and representative for the International Space Station. Served as liaison between NASA and Canadian Space Agency and advocate for commercial space initiatives.

Board Experience

Skuid, Inc., Chattanooga, TN
Director

December 2015 – May 2019

Oversaw business operations for the design, build, and delivery of a low code development platform for enterprise application software.

- Shepherded the company through three rounds of funding to support triple-digit growth.
- Oversight of B2B software development that facilitates software development for operational leaders.

IA Global, Inc. (AMEX: IAG), San Francisco, CA and Tokyo, Japan
Director | Chairman

June 2010 – May 2014

Directed all aspects of business operations for this public holding and advisory company with primary assets in Japan.

- Divested legacy call center assets to focus on business-to-business (B2B) Internet, IT, and software concerns.
- Established and implemented a turnaround plan after the Fukushima earthquake in 2011.

Amtech Systems Inc., Tempe, AZ
Director

September 2005 – December 2010

Oversaw business operations in the U.S. and Netherlands for this public company specializing in solar capital equipment.

- Directed the strategic alignment and proper balance of semiconductor and solar resources to address the growing Chinese solar panel business.
- Organized a \$34M capital raise via Form S-3 secondary offering that was used for an acquisition in Montpellier, France (R2D Automation) and for capital improvements in Vaassen, Netherlands (Tempress).

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Previous Experience

Vice President, Technology • Accudyne Corporation, Melbourne, FL

Director, Business Development • Mission Research Corporation (acquired by AKT, NYSE: OA), Santa Barbara, CA

Director, Business Development, Infrared Systems • Amherst Systems, Inc (acquired by Comptek and later by Northrup Grumman, NYSE: NOC), Amherst, NY

Director, Sales • International Science and Aerospace Center, SAIC, Cape Canaveral, FL

Program Manager, Electronic and Optical Materials Division • United States Air Force, Wright-Patterson Air Force Base, OH

Research Physicist, Laser and Optical Materials Branch • Materials Laboratory, United States Air Force, Wright-Patterson Air Force Base, OH

Additional experience as

Service Member • United States Air Force

Education

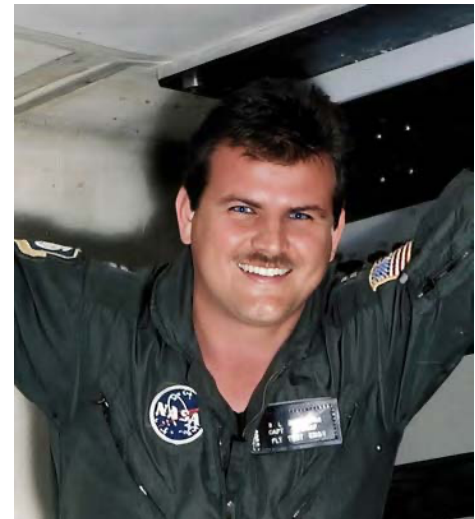
Graduate, Squadron Officer School, Air Command and Staff College
United States Air Force, Maxwell Air Force Base, Montgomery, AL

Graduate, Contemporary Optics I and 2
Institute of Optics, University of Rochester, NY

All coursework completed towards a **Master of Science in Electro-Optics**
University of Dayton, Dayton, OH

Bachelor of Applied Science in Physics
Illinois Institute of Technology, Chicago, IL

Mechanical and Aerospace Engineering
United States Air Force Academy, El Paso County, CO



Certifications & Training

Manned Space Flight Certification, United States Air Force

Project Management Certificate, Air Force Institute of Technology (AFIT), Wright-Patterson Air Force Base, OH

Undergraduate Pilot Training (Class 83-05), United States Air Force, Reese Air Force Base, TX

École de l'air et de l'espace French Language Program, United States Air Force Academy, CO

Patents

U.S. Patent Nos. 6,489,588, 6,660,963, and 6,420,678 titled, "Method and Apparatus for Separating Non-Metallic Materials"

International Patents issued from PCT Publication WO/0138039: AU1790001, CN1413136, EP1232038, JP2003-534132, KR2001-095501, KR2002-028510, TR2002-01402, TW473794, JP 11/630,165 PCT US05/21930

U.S. Patent No. 6,211,488 titled, "Method and Apparatus for Separating Non-Metallic Substrates Utilizing a Laser-Initiated Scribe," issued April 3, 2001

U.S. Patent No. 6,252,197 titled, "Method and Apparatus for Separating Non-Metallic Substrates Utilizing a Supplemental Mechanical Force Applicator," issued June 26, 2000

US No. 2007/0284785A1 "Device System and Method for Cutting, Cleaving or Separating a Substrate Material", issued Dec 13, 2007

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Honors & Awards

Air Force Commendation Medal
Air Force Achievement Medal
Air Force Outstanding Unit Award
Air Force Organizational Excellence Award
National Defense Service Medal
Air Force Longevity Service Award
Small Arms Expert Marksmanship Ribbon
Air Force Training Ribbon

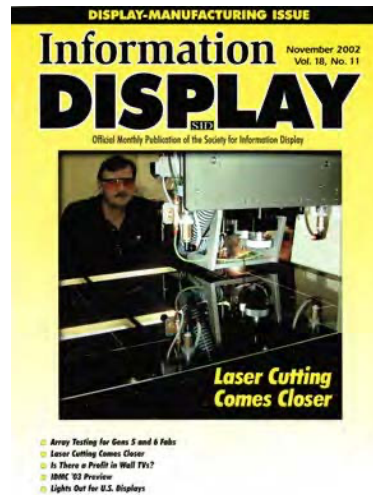
Selected Publications & Presentations - see attachment for full details

Recent Boards & Committees

Director, Smiles & Beyond (non-profit), Phoenix, AZ, 2019 – 2021
Director, Skuid, Inc, 2016 – 2019
Chairman, Pinnacle Forum America (non-profit), Phoenix, AZ, 2010 – 2014
Chairman, IA Global, Inc (AMEX: IAGI), 2009 – 2012
Director, Compensation, Strategic Acquisitions, and Audit Committees, Amtech Systems, Inc (NASDAQ: ASYS), 2005 – 2009

Professional Affiliations

Materials Research Society
Laser Institute of America
Institute of Electrical and Electronics Engineers (IEEE)
American Institute of Aeronautics and Astronautics (AIAA)
American Society for Metals (ASM) International
Society of Photo-Optical Instrumentation Engineers (SPIE)
American Association for Crystal Growth
Association of Old Crows
U.S. Display Consortium
Semiconductor Equipment and Materials International (SEMI)



Cover of Information Display, Nov 2002

Operational Proficiencies

Served as crew and provided operational support for T-38, T-37, T-41, EC-135 (ARIA), NASA KC-135 zero-gravity aircraft, and STS-32, STS-50, STS-65, STS-73 NASA Space Shuttle missions. ATIRCM, DIRCM, THAAD, and AN/AAR-47 MWS systems. Secret Clearance, Department of Defense (DoD), Inactive.

Technical Proficiencies

Laser system design, laser cutting, laser ablation, laser marking, laser annealing, laser texturing, laser lift-off (LLO), ultrashort pulse lasers, excimer lasers, metrology, surface analysis, physical vapor deposition (PVD), electro-optical (EO) sensors, focal plane arrays (FPA), device manufacturing, microgravity science, crystal growth, glass, fused silica, quartz, diamond, sapphire, silicon nitride, optics, nanotechnology, linear motion systems, electronics, electro-optics, optoelectronics, nonlinear optics, photonics, photovoltaics, physics. Sarbanes-Oxley, NACD, Reg D, GAAP, IFRS Compliance.

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Select Publications & Presentations

---- Publications ----

- Design and Testing of a Laser Beam Homogenizer* – with Nils C. Fernelius, Kenneth R. Bradley, USAF/AFWAL-TR-84-4042, 1984
- Computer Assisted Analysis of Electronic Transport Data*, with J Lang, P. M. Hemenger, AFWAL Internal Technical Report, 1984
- Liquid Phase Epitaxial Regrowth of Ion Implant Damage on Silicon on Sapphire* – *Materials Research Society, Boston, 1985*
- Rapid Thermal Processing to Improve the Epitaxy of (100) Silicon on (1102) Sapphire*, SOS Workshop, Jackson Hole, WY, 1985
- Nd:YAG Laser Annealing of Gallium Implanted Silicon* – USAF/AFWAL-TR-85-2065, 1985
- A Study of Defects in Neutron Transmutation Doped Silicon:Gallium by Hall Effect Analysis*, with WC Mitchel, AFRL, 1985
- Substitution of Photonic Devices for Electronic Devices to Defeat EMP Radiation and Electronic Warfare Threats, Project Forecast II, Crystal City, VA, 1985*
- Laser Annealing of Ohmic Contacts for Hall Effects Measurement of Narrow Bandgap Materials* – with P Hemenger, AFRL, 1985
- Modeling of HgCdTe Heterojunction Devices* – with WC Mitchel, M Ohmer, AFWAL, 1986
- A Comparative Study of the Influence of Convection on GaAs Growth* - with J Kafalas, GTE Labs, 1986
- Pulsed Laser Annealing of 6 MeV Gallium Implanted Silicon* - with J Baker, MRS Bulletin, 1986
- Integration of Optical Fibers, Optical Materials, Optical Sensors, and Optical Processing into an "Optical Jukebox"* – with Melvin Chubb, Project Forecast II, Crystal City, VA, 1986
- Recrystallization Studies of Silicon Films Amorphized by Ion Implantation*. Bulletin of the American Physical Society, 1986
- Growth of Electronic Materials in Microgravity* - with WR Wilcox, Proc. Space Station in the 21st Century, AIAA, 1986
- Laser Induced Metal Deposition on Semiconductor, Metallic and Polymeric Substrates* - with J Zahavi, IIM, 1987
- Growth of Large Zeolite Crystals in Space* – with Albert Sacco, WPI, 1987
- Performance of Quarter-Micron GaAs Metal-Semiconductor Field-Effect Transistors on Si Substrates* – AFOSR TR 88-0350, 1988
- X-Ray Diffraction Imaging for Crystal Characterization* – with M Kuriyama, Bruce Steiner, NIST Brookhaven National Lab, 1988
- Perspectives on Early Use of Low Earth Orbit for Space Manufacturing*, Proceedings of the 2nd International Conference Commercial Space, Montreux, 1988
- Liquid Encapsulated Melt Zone Growth of Gallium Arsenide* – with G.J. Abbaschian, T J Anderson, University of Florida, 1989
- An Exploration of Benefits from NASA Spinoffs, Case Studies* - NASA Document III-30 - with Richard L. Chapman, 1989
- Effect of Thermal and Acceleration Perturbation on Fluid Flow and Crystal Morphology in Vapor Phase Crystal Growth* – with M E Glicksman, RPI, 1990
- Modeling Microdefect formation in Czochralski Silicon* – with R A Brown, MIT, 1990
- Growth of Crystals for Room Temperature Infrared Detectors and Non-Linear Optical Devices* – with R B Lal, Alabama A&M University, 1991
- Cadmium Telluride Solidification* – R. Balasubramanian, Clarkson University, Carl Johnson, II-VI, 1992
- Indium Antimonide Solidification in a Transparent Furnace KC-135*, NASA Technical Memorandum 4456, Materials Science on Parabolic Aircraft, 1993
- Computer Modeling for Optimization of Flight Hardware* – with F Carlson, Clarkson University, 1994
- Crystal Growth of CdTe in Space and Thermal Field Effects on Mass Flux and Morphology* – with H. Wiedemeier, RPI, 1995
- Advanced Glass Separation*, Society for Information Display, 1999
- Laser Edge Seaming of Glass* – with Franz-Josef Kahlen (UCF), First International TFT Conference, 2000
- Laser Enhanced Processing Methods for FPD Manufacturing*, ICALEO, 2001

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---- Publications (continued) ----

Laser Glass Machining for Crack Initiation and Edge Seaming in FPD Manufacturing - with Aravindra Kar (UCF), ICALEO 2002

Laser Cutting Comes Closer – Information Display, 2002 - with Sri Venkat, Coherent, Inc.

Singulation of Flexible Displays, USDC, 2003

Recent Advances in Laser Glass Cutting for Mass Production of LCD panels – FPD Taiwan, 2006

Laser Cutting in an LCD Production Environment - National Chiao Tung University, 2007

Application of Laser Texturing to Multi-Crystalline Silicon Wafers – Delft Institute of Microsystems and Nanoelectronics, 2009

Process Analysis and Optimization for LCD Laser Cutting – National Chiao Tung University, 2009 – with Ben Zheng

High-Throughput TEM and XMR Sample Preparation for Microstructure Diagnostics, LAM Houston, 2017

TLS-Dicing: A Novel Laser-Based Dicing Approach for Silicon Carbide Power Devices, White Paper, 2018

Ohmic Contact Formation for SiC Power Devices – White Paper, 2019

---- Presentations ----

Speaker, Gordon Conference on Crystal Growth, 1984, 1986

Materials Processing in the Reduced Gravity Environment of Space- MRS Fall Meeting, 1987

Contributor and Collaborator for the Presidential Directive on National Space Policy, February 11, 1988

Congressional Presentation for a Commercially Developed Space Facility (CDSF/ISF) – with Ernst Stuhlinger and Max Faget, 1988

Testimony on Commercial Space Initiatives to House and Senate Committees on Science, Space and Technology, 1988, 1989

Session Chairman, NASA/SDIO Space Environmental Effects on Materials, 1989, 1990

Panel Speaker, Space Station Microgravity Science Advisory Board, 1990

Session Chairman, USAF/SDIO Keynote Speaker, Space Test Program (STP) Materials Experiments, 1990

Participant, White House Cabinet Council Working Committee on Technology Commercialization, 1991 - with LJ Evans, Jr

Panel Chairman, Space Station Program, Space Congress, 1991

Potential DoD uses of Commercial Space Platforms – with Robert Naumann, UAH, 1992

Keynote Speaker, Space Programs and Technology Conference, Huntsville, AL, 1995

Sponsor, Speaker, & Exhibitor – Display Week, Society for Information Display, 2000 – 2010

Exhibitor/Speaker, International Congress on Applications of Lasers & Electro-Optics (ICALEO) – 1999 - 2015

Sponsor, Speaker, & Exhibitor – SEMICON West, 2006 – 2019

---- Innovations and Inventions ----

In situ Optical Monitoring of the Vertical Bridgman Melt Crystal Interface

Dynamic Control of Vertical Bridgman Melt Interfaces via Laser Annealing

Heat Exchange Method (HEM) Process Improvements for Growth of Industrial Sapphire Crystals

MultiBeam Titler System for laser marking of 2D bar codes on gen 4 to gen 8.5 glass substrates

High Speed Laser Marking System Utilizing an Acousto-Optical Deflector (AOD)

Fully Automated Full Cut Laser Singulation System for Laminated LCD Panels

Laser Separation of Chemically Strengthened Glass Panels Utilizing an Integrated Cleaving Device (ICD™)

Precision transfer and alignment of Laser Lift Off (LLO) Films for LED microDisplay Applications

Stealth Laser Marking on Display Glass for POS Applications

Laser Surfacing and Texturing of Solar Cells

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Reference Clients, Customers, and Development Partners

Samsung Electronics	Mitsubishi Corporation	Sharp Electronics
Innolux/Foxxcon	Harris Corporation	Seiwa
Toray Engineering	Pasabahce Glass	Planar Systems
Joyo/JSW	Raytheon Company	Hughes Research Labs
Gentex Corporation	NASA MSFC, Lewis, Langley	Space Industries Inc
Chi Mei Optoelectronics	University of Central Florida	Crystal Systems (GTAT)
Joyo Engineering (JSW)	ESI/MKS Instruments	Synrad
Philips Components BV	3D-Micromac AG	Veeco
Teledyne Brown Engineering	Bionetics Corporation	Hanwha QCells
AU Optoelectronics	Hannstar Display Corporation	Northrup Grumman
II-VI Incorporated	Toppoly Optoelectronics	U.S. Display Consortium
Applied Materials	St Gobain S.A.	Jenoptik
Dupont Displays	Coherent, Inc	Automatisierungstechnik
Sharp Electronics	Corning, Inc	European Space Agency
State of Florida	Rorze Systems	Canadian Space Agency
State of New York	Swarovski AG	Boeing Aerospace
Walt Disney World	Westinghouse R&D	3M
Contrel Corporation	Shirai	LG Electronics
Newport Corporation	EG&G	Amtech Systems
Sharp Solar	Rockwell International	AT&T Bell Labs
TPK China	Apple, Inc	Sony STLCD
Northrup Grumman		Lumentum
Lockheed Martin		MIT Lincoln Labs

Reference Equity Transactions

	<u>Year</u>	<u>Raise</u>
3D-Micromac AG – Private Equity Investment via 3D Capital Partners, LLC	2020	\$10M
Participation Agreement with Coherent, Inc. (NASDAQ: IIVI)	2018	\$3.5M
Skuid, Inc. - Series A, Series B, Series C, Acquired by Nintex (2023)	2016	\$60M
IA Global, Inc. (AMEX: IAG) – Credit Facility – S-1 Registration	2011	\$5M
Amtech Group (Nasdaq: ASYS) - Secondary public offering – S-3 Registration	2007	\$34M
Applied Photonics, Inc. – Series A and subsequent acquisition by ESI	2005	\$12.7M
Mission Research Corp – Acquired by AKT	2004	\$230M
Amherst/Comptek Research – Acquired by Northrup Grumman (NOC)	2000	\$155M