

Technology Transfer Panel Discussion

Speakers



Moderator: Mark Tolbert, President, Toptica Photonics Inc.



Sandia National Laboratories Optics Licensing Opportunities: Fiber Saturable Absorber and More

Dan Allen, Licensing Executive, IP Management, Alliances and Licensing Department, *Sandia National Laboratories*

Sandia has demonstrated an all-fiber amplitude discriminator (4FAD) that functions like a power-dependent waveplate or saturable absorber. 4FAD has applications for reducing cost and improving fiber laser performance, including bi-directional isolation of amplifier ASE, wavelength stability, passive modelocking, power-limiting, and pulse compression/cleanup. Sandia researchers received two recent R&D 100 awards for a successful 6 year R&D effort that produced multifunctional optical and infrared coatings (e.g. AR, HR, dichroic) without vacuum deposition. The polymer-nanocrystal composite hydrophobic coatings employ self-organization to produce single or multiple layers in a drying polymer applied in a single spray or dip coating step. The process is potentially scalable for large area or irregularly shaped surfaces. Other licensable optics technologies include a compact multifunctional trace/greenhouse gas detection spectrometer, stable Silicon photonics modulators, and a spin-on silica microsphere layer for reduced defect density and easy liftoff of GaN. Contact Sandia for current licensing availability.

Speaker Profile

Dan Allen is an IP manager and licensing executive at Sandia National Laboratories overseeing several hundred patents in optics, microelectronics, and nanoscience. He has a Ph.D. in physics from UC Santa Barbara and research experience in terahertz quantum cascade lasers, quantum computing, and semiconductor nanoscience, as well as industry experience in optomechanics design. He has contributed several inventions offered in major optical component supplier catalogs.

About Sandia National Laboratories Technology Transfer

Sandia National Laboratories has about 8000 employees at sites in New Mexico and California and performs tens of millions of dollars in commercially-funded R&D every year, in addition to nearly two billion dollars in federal R&D and mission-related work. Sandia's technology transfer

effort enhances US competitiveness through collaborative R&D and licensing of cutting-edge innovations to small and large companies. Commercial licenses require substantial manufacture of licensed product in the US, or a net benefit to the US. Successful products based on Sandia technology range from lead-free solder to breakthrough supercomputing architectures, from industrial process monitoring to business data and risk analysis software, and pioneering VCSEL and MEMS technologies. Visit <http://sandia.gov> or contact partnerships@sandia.gov. (Sandia National Laboratories is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under Contract DE-AC04-94AL85000.)



Encouraging Innovation and Facilitating Technology Transfer at Stanford University

Tom Baer, Executive Director, Stanford Photonics Research Center, *Stanford University*

The presenter will describe the history, policy and practices of the Stanford University Office of Technology Licensing (OTL).

Speaker Profile

Dr. Baer is currently the executive director of the Stanford Photonics Research Center and a member of the Applied Physics Department at Stanford University. His research is focused on developing imaging and analysis technology for exploring the molecular basis of developmental biology and neuroscience. From 1996 to 2005 Dr. Baer was the CEO, chairman, and founder of Arcturus Bioscience, a biotechnology company located in Mountain View, CA, which he established in 1996. Prior to Arcturus, Dr. Baer was vice president of research at Biometric Imaging, where he led an interdisciplinary group developing products with applications in the areas of AIDS monitoring, bone marrow transplant therapy, and blood supply quality control. From 1981 to 1992 Dr. Baer was at Spectra-Physics, Inc., where he held positions as vice-president of research and Spectra-Physics Fellow. Dr. Baer has made major contributions in the areas of biotechnology, quantum electronics, and laser applications, and is listed as an inventor on 60 patents and is a co-author on many peer reviewed publications in a number of different scientific fields. His commercial products have received many industry awards for design innovation. Co-founder of four companies in Silicon Valley, he was named entrepreneur of the year for emerging companies in Silicon Valley in 2000, by the Silicon Valley Business Journal. Dr. Baer graduated with a BA degree in Physics Magna Cum Laude from Lawrence University and received his MS and Ph.D. degrees in Atomic Physics from the University of Chicago. He is also an alumnus of Harvard Business School and in 1994 he received the Distinguished Alumni Award from Lawrence University. He has been elected to the status of Fellow in two international scientific societies, the American Association for the Advancement of Science and The Optical Society of America (OSA) and served as the President of OSA in 2009.

About Office of Technology Licensing, Stanford University

The Office of Technology Licensing at Stanford University is responsible for managing the

intellectual property assets of Stanford University. Scientific insights and academic breakthroughs draw interest and enthusiasm from the research community when they are presented at a scientific meeting or published in a journal. However, without a company willing to invest in bringing the invention to marketplace, many potential benefits of these breakthroughs are likely to end on the page. At OTL our charter is to help turn scientific progress into tangible products, while returning income to the inventor and to the University to support further research. OTL receives invention disclosures from Stanford faculty, staff and students. We evaluate these disclosures for their commercial possibilities, and when possible license them to industry. If the inventions are successfully licensed, cash royalties collected by OTL provide funding to the inventors' departments and schools, as well as personal shares for the inventors themselves.

We typically begin the licensing process by reviewing an invention with the inventors to learn about potential applications. We then develop a licensing strategy, consider the technical and market risks, and decide whether to patent the invention. Together with the inventors, we try to find companies that might be interested in the invention and seek a product champion within a company before negotiating a licensing agreement.



[Technology Transfer at the NRL Optical Sciences Division](#)

Craig Hoffman, Associate Superintendent, Optical Sciences Division, *Naval Research Lab*

The Optical Sciences Division of the Naval Research Laboratory performs a wide range of basic and applied research on many areas of optics that are of current or potential future interest to the Navy and the Department of Defense. This includes materials, devices, and techniques for generation, transmission and detection of electromagnetic radiation from the X-ray through the terahertz regime. Specifically, we will present advances in optical ceramics for windows (i.e. spinel { $MgAl_2O_4$ } and calcium lanthanum sulfide), ceramic laser hosts (Y_2O_3 , Lu_2O_3), active and passive infrared transmitting fiber, bioconjugated quantum dots for chemical/biological sensing, type II superlattice infrared detectors and lasers, nanostructured polymer optics, ionizing radiation detectors, MEMS and MOEMS chemical sensors, free space optical communications, fiber optic acoustic/seismic sensors, structural health monitoring, and photonics solutions for RF processing.

Speaker Profile

Craig Hoffman is associate superintendent of the Optical Sciences Division at the U.S. Naval Research Laboratory. In this position he aids the superintendent in guiding the research of ~200 government and contract scientists in myriad areas of optical science including infrared optical materials, organic opto-electronics, semiconductor diode lasers, quantum dot optics, bio-chemical sensing, hyperspectral imaging, infrared focal plane arrays, infrared countermeasures, imaging reconnaissance systems, optical fiber research and fiber optic sensing. Dr. Hoffman's own research has included the physics of narrow gap semiconductors and superlattices and the susceptibility and hardening of infrared detectors and focal plane arrays to laser radiation. He has published over 200 scientific papers in the open and classified literature. In addition, he

represents NRL and the Navy on a variety of Navy and DoD scientific and technical panels. Dr. Hoffman came to NRL as a National Research Council post-doctoral fellow after receiving his M.S. and Ph.D. degrees in physics from Brown University. He received his B.S. degree in physics from Purdue University. After his fellowship, he joined NRL as a staff scientist. He became a section head in the Optical Physics branch and was then appointed associate superintendent. Dr. Hoffman is a member of OSA, IEEE, Sigma Xi and Phi Beta Kappa.



MIRTHE Investment Focus Group: Creating Infrastructure to Transition Early Stage Technologies to Commercial Use

Joseph X. Montemarano, MIRTHE Executive Director, PRISM Director for Industrial Enterprise, *Princeton University*

For universities conducting pioneering and even transformation research, one finds that early stage technologies need to be transitioned into a business context that the investment community can understand and evaluate. MIRTHE established an Investment Focus Group at Princeton University, which is comprised of Venture Capital and Angel investors, State Government Economic Development, among other key skill sets to mentor entrepreneurs from within academia as well as collaborating small technology companies. The purpose is to help inform the investment community of key opportunities, as well as to access investor experience and mentorship. The Investment Focus Group also brings in large companies that are looking for suppliers of new products as well as potential acquisition relationships.

Speaker Profile

Joseph X. Montemarano has been involved in state-of-the-art research and commercialization efforts related to health-care, defense and homeland security, advanced materials, computer science and photonic applications throughout his career. Mr. Montemarano has helped large and small companies, and government researchers access emerging technologies, faculty and other university resources resulting in a significant increase in sponsored research, the launch of several spin-off companies, and successful technology commercialization and fielded applications. He joined Princeton University in July 1994, and currently serves as Executive Director for the NSF-Engineering Research Center on Mid-InfraRed Technologies for Health and Environment (MIRTHE) led by Princeton University, and Director for Industrial Enterprise for the Princeton Institute for Science and Technology of Materials (PRISM). Prior to joining Princeton University, Mr. Montemarano served as Associate Director for Science, Technology, and New Business Ventures with the New Jersey Commission on Science and Technology. His State government service spanned three NJ Governors (Hon. Kean-R, Florio-D and Whitman-R). He helped formulate effective state economic development policy, and managed diverse science, engineering and business programs totaling over \$250 million. Prior experience includes business and technology management and R&D programs at PA Consulting Services, Inc., Allied-Signal/Bendix Advanced Technology Center, University of Maryland Medical School, and The Johns Hopkins University. He received his B.A. in Biology, and his M.S. in Computer Science, both from The Johns Hopkins University.



Michael Pavia, President and Co-Founder, *Sydor Instruments, LLC*

Speaker Profile

Michael Pavia is the president and co-founder of Sydor Instruments, LLC. Sydor Instruments manufactures precision diagnostic imaging systems for US and European government agencies. He started the company 8 years ago with a technology licensed from the University of Rochester and has grown it to become one of the Inc 5000 fastest growing companies in America. The company is also a recipient of the UNYTECH award for most innovative business model of technology transfer.

Mr. Pavia's earlier work includes a variety of technical and leadership positions in electro-optics, semiconductor systems, aerospace/defense, and imaging. Prior to starting Sydor Instruments, he built a successful track record in advanced product commercialization for Eastman Kodak Company, launching products on a global basis as the worldwide marketing manager of a \$1.5B strategic product group.

He currently serves as an instructor in entrepreneurship and technology fellow for the office of technology transfer at the University of Rochester. He holds a B.S. in Optics from the University of Rochester.