

MIT SWE

presents

Engineering the Future

**Careers in High
Technology**

Welcome!

The MIT Society of Women Engineers would like to welcome all graduate and undergraduate students, faculty and staff to the first annual 2002 Engineering the Future Conference. This year's conference theme is "**Careers in High Technology.**"

The purpose of this conference is to discuss the futures of up and coming industries. This year the conference will focus on the fields of telecommunications and wireless, energy, biotech, and nanotechnology. Panels composed of industry experts, venture capitalists, academics and members of regulatory agencies will discuss where the industry has been, where it is now and where it is headed in the future. Panelists will answer questions about the kinds of opportunities that await industry players and recent graduates considering a career in that industry.

Highlights include keynote addresses from Sycamore Networks founder Desh Deshpande and Nobel laureate Walter Gilbert, an alumni luncheon where students can network with recent alumni working in these high tech fields, the four panel discussions and an evening banquet at the University Park Hotel.

We hope you enjoy the conference and we look forward to seeing you there!

Sincerely,

Stephanie Norris
Conference Director

Jennifer Clarke
MIT SWE co-President

Anne Dreyer
MIT SWE co-President

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The Society of Women Engineers originated when small groups of women engineers and women engineering students began meeting independently in Boston, New York, Philadelphia and Washington, DC. Nearly 50 women from these groups came together on May 27, 1950, in New Jersey at Green Engineering Camp of the Cooper Union and formed the Society of Women Engineers.

SWE is a non-profit educational service organization dedicated to making known the need for women engineers and encouraging young women to consider an engineering education. The organization's four objectives are as relevant today as they were more than 50 years ago:

- To inform young women, their parents, counselors, and the public in general of the qualifications and achievements of women engineers and the opportunities open to them.
- To assist women engineers in readying themselves for a return to active work after temporary retirement.
- To serve as a center of information on women in engineering.
- To encourage women engineers to attain high levels of educational and professional achievement.

The mission statement, adopted in 1985, states: The Society of Women Engineers stimulates women to achieve full potential in careers as engineers and leaders, expands the image of the engineering profession as a positive force in the quality of life, and demonstrates the value of diversity.

While most SWE members are women engineers or women engineering students located in the United States and Puerto Rico, anyone who supports the organization's objectives may apply for membership.

Saturday, March 16, 2002

Massachusetts Institute of Technology
77 Massachusetts Ave, Cambridge, MA 02139

9:15 - 9:45	Breakfast	10-250
10:00 - 10:15	Welcome	10-250
10:15 - 11:00	Opening Keynote Address "Desh" Deshpande	10-250
11:15 - 11:45	Second Keynote Address David Kestenbaum	10-250
11:45 - 12:30	Third Keynote Address Walter Gilbert	10-250
12:30 - 2:00	Lunch	Stratton Student Center
2:15 - 3:45	Panels 1 & 2 Telecommunications Biotechnology	4-270 4-370
4:00 - 5:30	Panels 3 & 4 Energy Tiny Technologies	4-270 4-370
6:30 - 7:30	Cocktail Reception	University Park Hotel
7:30 - 8:45	Dinner Reception	University Park Hotel

Gururaj “Desh” Deshpande

Founder and Chairman, Sycamore Networks



Gururaj “Desh” Deshpande is co-founder and chairman of Sycamore Networks, Inc.

Dr. Deshpande co-founded Sycamore Networks in 1998 with the vision of creating next-generation optical networking technology that will revolutionize the backbone of the public network. Sycamore has already received numerous awards. The company was named one of the Top 25 Hot Start Ups (Data Communications), Hot 100 Private Companies (UPSIDE), Top 100 Companies of the Electronic Economy (Red Herring), and both Cool Companies for 1999 and Top 10 Picks for 2000 (Fortune).

Sycamore’s products received the SuperQuest Award at SUPERCOMM ’99 with Williams Communications; the Communications Equipment Award in the Top Ten Hottest Technologies for 1999 from UPSIDE; and the Top

Ten Hottest Technologies from Telecommunications.

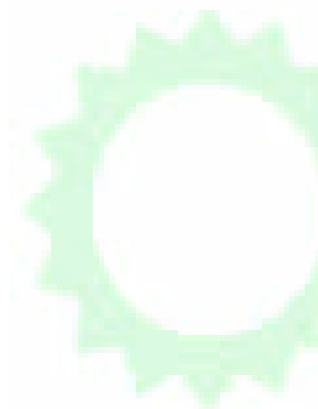
Prior to co-founding Sycamore Networks, Dr. Deshpande was founder and chairman of Cascade Communications. Between 1991 and 1997, Cascade grew from a one-person startup to a company with \$500 million in revenue and 900 employees. Cascade was named one of the “Top 25 Very Cool Companies” (Forbes, 1996). In June of 1997, Cascade was acquired by Ascend Communications for \$3.7 billion.

Prior to Cascade, Dr. Deshpande co-founded Coral Network Corporation in 1988 and was with the company until 1990. Previously, he served in various management positions for Codex Corporation, a subsidiary of Motorola, and taught at Queens University in Kingston, Canada.

Dr. Deshpande has garnered many top industry honors. In 1999, both Red Herring and Massachusetts Investor’s Digest named him one of 1999’s Top Entrepreneurs and Dr. Deshpande was named the 1999 Mass High Tech All-Star in the telecommunications industry. The Massachusetts Telecommunications Council named him Industry Player for 2000. In 2001, the International Institute of Boston presented Dr. Deshpande with the Golden Door Award, an honor reserved

for U.S. citizens of foreign birth who have made outstanding contributions to American society. He has also been the subject of numerous business and trade press articles.

Dr. Deshpande holds a B.S. in Electrical Engineering from the Indian Institute of Technology in India, an M.E. in Electrical Engineering from the University of New Brunswick in Canada and a Ph.D. in Data Communications from Queens University in Canada.



David Kestenbaum



David Kestenbaum became unreasonably obsessed with small things at a young age. He studied quarks as an undergraduate at Yale University and in his graduate work in physics at Harvard University where he received his Ph.D. in 1996. David's thesis detailed part of the discovery of the top quark. David received a journalism fellowship from the American Physical Society the same year, and won the Evert Clark award for young science journalists in 1997. His work has appeared in Science magazine, The New York Times, The New Republic and other places. David spent a year as a reporter for Science, before moving to National Public Radio in 1999. He loves his job.

Walter Gilbert



Dr. Gilbert is a renowned scientist who won a Nobel Prize for Chemistry in 1980 for developing DNA sequencing technology. He has held professorships at Harvard University in the Departments of Physics, Biophysics, Biochemistry, and Biology, and since 1985, in Molecular and Cellular Biology (formerly Cellular and Developmental Biology). He presently holds the Carl M. Loeb University Professorship. Dr. Gilbert received his Ph.D. in Mathematics from Cambridge University in 1957, a M.A. in Physics in 1954, and a B.A. in Chemistry and Physics in 1953 from Harvard University. His current research interests include molecular evolution and intron/exon gene structure.

Dr. Gilbert was a co-founder of Biogen, Inc. and served as its Chairman of the

Board and Chief Executive Officer from 1981 to 1984. In 1992, he was a co-founder of Myriad Genetics, Inc., and serves as Vice Chairman, and in 2001, he was a co-founder of Myriad Proteomics, Inc., and serves as Chairman. In 1994, he founded Memory Pharmaceuticals Corp., of which he is a Director, and in 1996 Paratek Pharmaceuticals, Inc., of which he is Chairman. In 1999, he was a co-founder of Pintex Pharmaceuticals, Inc., and serves as Chairman. Since 2001, he has been a partner in BioVentures Investors. He participated in the establishment of the Human Genome Project. He received an "Entrepreneur of the Year" award in 1991 from the Institute of American Entrepreneurs.

Between the expanding possibilities of the Internet, and the fierce competition amongst all players involved, the Telecommunications Industry has been evolving very rapidly in unforeseen ways. The potential for an enormously lucrative payoff attracted a massive investment capital influx, fueling the creation of new companies and the rate of mergers and acquisitions. Now faced with a decline in the initial investment frenzy, many are left wondering whether new companies will provide enough revenue growth to continue the industry improvements. What will the new 'killer applications' be and what will serve as the driver for wireless? Will broadband take off for consumers, or will it remain a business focused utility? How will optical switching shape the industry? What careers show the greatest potential for growth? The panel composed of venture capitalists, industry experts and academics will debate these issues. Moderator: David Kestenbaum.



Sanjeev Verma

Prior to founding Airvana, Sanjeev was most recently Director of Marketing and Business Development for Broadband Networking at Motorola, responsible for wireless and wireline broadband residential gateway solutions. Sanjeev has an extensive software development background, which includes leading the development of Motorola's first V.34 modem. He was also a senior manager in Motorola's strategy group responsible for the Internet and Networking Group's broadband

networking strategy. Sanjeev holds an MBA from the MIT Sloan School of Management and an M.S. in Electrical Engineering from the University of Rhode Island.



Vincent W. S. Chan

Vincent W. S. Chan (Principle Investigator) is the Joan and Irwin Jacob Professor of Electrical Engineering and Computer Science and Aeronautics and Aeronautics, and Director of the Laboratory for Information and Decision Systems (LIDS) at MIT. He received his BS (71), MS (71), EE (72), and Ph.D. (74) degrees in electrical engineering from MIT in the area of com-

munications. From 1974 to 1977, he was an assistant professor with the School of Electrical Engineering at Cornell University. He joined Lincoln Laboratory in 1977 as a staff member of the Satellite Communication System Engineering Group working on military communications and networking. In January 1981, he became the Assistant Leader of the Communication Technology Group starting a research and development program on optical space communications. In July 1983, he formed and became Leader of the Optical Communication Technology Group and Manager of the LITE (Laser Intersatellite Transmission Experiment) Program. In 1990, he became the Director of the AON (All-Optical-Network) Consortium formed among MIT AT&T and the Digital Equipment Corporation. He became the Head of the Communications and Information Technology Division of Lincoln Laboratory until joining LIDS in 1999. He currently also serves as the principal investigator of a Next Generation Internet Consortium (ONRAMP) formed among AT&T, Cabletron, MIT, and JDS Fitel and another Satellite Networking Consortium formed among MIT, Motorola, Teledesic and Globalstar. He is a member of the Board of Directors of Vitesse Semiconductor Corporation and the Chairman of its Technical Advisory Board. He also serves on the Technical Advisory Boards of Agility Communications, Axiowave Networks (Chairman), and Laerssharp (Chairman) and is a member of the Strategic Advisory Board of Loral Space Corporation. He is a member of the DARPA (Defense Advanced

Research Project Agency) ISAT (Information Science and Technology) Committee. His research interests are in optical communications, wireless communications, space communications and networks. He is a Fellow of the IEEE and the Optical Society of America.



David E. Schantz

David Schantz joined Matrix Partners in January 1998. From 1996 to 1998 he was director of product management and marketing and was a member of the founding team at Cadia Networks, Inc. Prior to that, he served as product line manager of the Service Provider Products Division at Bay Networks, Inc. from 1993 to 1996. Schantz was a member of the technical staff and a product manager in the Data Communications Business Unit at AT&T Bell Laboratories (Lucent) from 1988 to 1993.

Mr. Schantz received a Master of Science in Electrical Engineering degree from Columbia University and a Bach-

elor of Science in Electrical Engineering degree from SUNY Stony Brook (summa cum laude) and did postgraduate work at New York University's Stern School of Business.

Schantz currently serves or served on the Board of Directors of Airvana, Inc., Appian Communications, Inc., Cereva Networks, Inc., Convergent Networks, Inc., Crossbeam Systems, Inc., Netezza Corporation, SandBurst Corporation, SilverBack Technologies, Inc. and Snowshore Networks, Inc.



David Aronoff

David Aronoff is a General Partner at Greylock Partners, working from the Boston office. David joined Greylock in 1996 after a career in communications equipment development and management at Chipcom and Bell Labs. He received a B.S. in Computer Science, cum laude, from the University of Vermont, an M.S. in Computer Science from the University of Southern California and an M.B.A. with Distinction from the Harvard Business School.

David specializes in networking and

communications investments, and his portfolio investments include: Akara, Cimaron (Acquired by AMCC in 1999), eDial, Emperative, Ikanos Communications, Mazu Networks, Sandburst, SiTera (Acquired by Vitesse in 2000), T-Networks, Tiburon Networks, Xedia (Acquired by Lucent in 1999), and Xros (Acquired by Nortel in 2000).

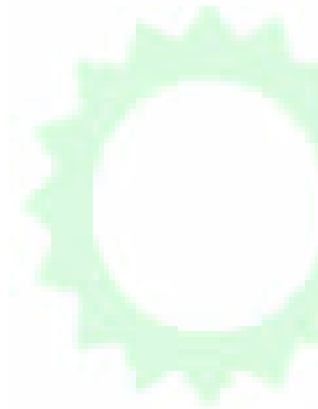


Allyson Hartzell

Allyson Hartzell is a Senior Staff Scientist at the Micromachined Products Division of Analog Devices in Cambridge MA. The MPD Division is now developing integrated micromirrors with electronic feedback control for optical switching networks and is also developing other optical telecommunications components. Allyson is currently the manager of Optical MEMS Reliability Engineering; she started at Analog Devices in 1997 and developed the reliability function for accelerometers while also working in the areas of yield engineering and microcontamination control. Prior to working for Analog, Allyson worked for 10 years at Digital Equipment in Hudson MA where she worked in reli-

ability and also developed the airborne molecular contamination lab in Fab6. Allyson worked in failure analysis and reliability at IBM in Manassas VA from 1982-1988.

Allyson has a ScB from Brown University in Materials Engineering (1982), and worked 10 years prior to getting her ScM from Harvard University in Applied Physics (1994), achieving her degree while at Digital Equipment. Allyson was the keynote speaker at the 2001 SPIE Conference on MEMS and delivered a talk on MEMS Reliability. In addition, she contributed a chapter to the 2001 text "Contamination-Free Manufacturing for Semiconductors and Other Precision Products" (edited by Robert Donovan); the chapter is titled "Deposition of Molecular Contaminants in Gaseous Environments". Allyson has published journal and conference papers in the fields of: microcontamination, MEMS reliability, electromigration, failure analysis and indoor air chemistry.



From revolutionizing the pharmaceutical industry to creating artificial organs, biotechnology is a rapidly growing field and a booming business. Not only do biotechnological innovations make great advancements in the medical field, but they also create huge opportunities for venture capitalists. As the "Dot Com Age" fades into the past, the "Biotech Age" looms as the exciting future. This panel will discuss topics including diagnostic procedures, drug delivery, tissue engineering, and many more. The panel will also discuss the regulation of a field that tends to be in the limelight of ethical debates.



Wolf W. von Maltzahn

Wolf W. von Maltzahn, Vice President for Biomedical Engineering at the Whitaker Foundation, received his undergraduate education in electrical engineering from the University of Stuttgart (Germany) and his graduate education in biomedical engineering from the Ohio State University in Columbus, OH. After completing his doctorate in biomedical engineering in 1979 at the University of Hannover, Germany, he accepted a faculty position in biomedical engineering at the University of Texas at Arlington.

His research focused on biomedical instrumentation, mathematical modeling, and the mechanical characterization of soft tissues, in particular small arteries. His research was funded by grants from NSF, NIH, AHA and some industry contracts. In 1994 he became the Director of the Institute for Biomedical Engineering at the University of Karlsruhe, Germany before joining the Whitaker Foundation in 1995. He runs the Young Investigator and Industrial Internship Programs, manages the Whitaker Annual Conference, participates in university site visits, and contributes to the strategic planning of the Foundation. He is a Fellow of AIMBE, a senior member of IEEE/EMBS, and a member of BMES and ASEE. He serves on the Board of Directors of BMES.

Scott A. Uhland

Dr. Scott A. Uhland is a Materials Scientist with MicroCHIPS, Inc. MicroCHIPS, founded in 1999, is pioneering the use of MEMS (micro-electro-mechanical systems) technology in the medical field, particularly the development of implantable drug delivery and sensing systems.



He joined MicroCHIPS in January 2000 as one of its initial principal investigators and is currently developing core technologies for the integration of medicine and MEMS devices. Prior to joining MicroCHIPS, Dr. Uhland received his Ph.D. in Materials Science and Engineering from the Massachusetts Institute of Technology. His thesis research focused on the fabrication of advanced ceramic components using colloidal-based rapid prototyping techniques. In 1996, Scott graduated summa cum laude from Rutgers University, where he received his B.S. in Ceramic Engineering while serving as President of the Tau Beta Pi honor society. During his undergraduate tenure, Dr. Uhland assisted in the development of passive and active fiber optic chemical sensors.

Gillian Isabelle

Dr. Isabelle works with PureTech Ventures, a life sciences venture creation firm in Boston. Prior to joining PureTech, Dr. Isabelle spent 10 years with Corning Inc. Her most recent role was as a project manager at Corning Microarray Technology, where she was responsible for leading the commercial development of early-

stage emerging technology ventures. Primary activities included screening external technologies and negotiating licensing agreements, assessing competing technologies, and developing product road maps for genomics, proteomics, and microfluidics platforms. From 1991 to 1994, Dr. Isabelle worked as a senior scientist in Corning's Telecommunications Group, where she developed a new manufacturing process for optical fibers. Her work led to a 100% rate improvement in one of the key production steps. Prior to joining the Life Sciences Division at Corning, she performed doctoral research in tissue engineering in the Center for Biomedical Engineering at MIT. She holds a B.S., M.S., and Ph.D. in Materials Science and Engineering from MIT, UC Berkeley and MIT, respectively.

Joseph Bonventre

“Oil prices rise, signal inflation to come,” “Rolling blackouts cripple businesses in CA,” and “LA Nox emissions reach all time highs.” Everyday, newspapers and magazines remind the world that finite resources power technological progress. After the recent energy crisis some advocated the need for energy conservation while others advocated more exploration. This year’s abnormally warm winter raises questions of global warming. There are already many clean forms of alternative energy available which are not widely used. The panel will look at the future of the fossil fuels. It will also discuss the effects of deregulation on the power industry and will look at the future of energy in a greenhouse gas constrained future. Finally it will look at the future of alternative energy and the barriers that have kept it from becoming widely used. Moderator: Professor Ernest Cravalho.



Dr. Yeona Jang

Dr. Yeona Jang is responsible for strategic technology planning, architectures, and management of the enterprise-wide technology investment portfolio, serving various of lines of business in PSEG, as CTO and the Director of IT Development. PSEG is a diversified energy company (NYSE: PEG) with Power Generation and Trading, Utility, and Energy Management Services.

Before joining PSEG, Dr. Jang’s experience includes stints at zoggle.com, as one of the founding partners. zoggle.com was created with the vision of changing teen life by providing a best-in-class open-source platform to

educate and empower this Internet-savvy generation. At zoggle.com, she was CTO and COO, responsible for creating and managing the Internet-based business platform and fulfillment infrastructure.

Prior to zoggle.com, she served as Vice President and Executive Director in Citigroup, responsible for the development of Internet-based financial services and e-commerce applications. Dr. Jang’s experience in Citigroup includes strategic IT planning; Internet/wireless banking, trading, Internet security; Business-to-Business supply chain and commercial card management; smart card applications; and EBPP (electronic bill presentment and payments).

With 14 years’ business experience in strategic IT planning, large-scale information solution development, and managing complex system integrations/migrations in various industries, Dr. Jang enjoys utilizing technology to improve the way we do business. She holds an MS and Ph.D. in Computer Science from the Massachusetts Insti-

tute of Technology. She also earned an MS in Business Management from the MIT Sloan School of Management, and a bachelor’s degree in Computer Science and Statistics from Seoul National University, Korea. Dr. Jang serves an advisor for technology companies.



Vicki Norhberg-Bohm

Dr. Vicki Norberg-Bohm is the Director of the Energy Technology Innovation Project (ETIP) at BCSIA. ETIP focuses on the policies and institutional changes needed to develop and deploy a new generation of energy technologies that can address the multi-faceted challenges in the energy sector, including environment, development and security. She is currently leading two research projects: Technology Innovation for Global Change: The Role of R&D, Regulation and Assessment, which focuses on lessons for policy design from 3 energy technologies – gas turbines, wind turbines, and solar photovoltaics; and Voluntary, Collaborative and Information-based approaches to reaching energy and environmental goals, which examines the effectiveness of this new set of policy mechanisms. Prior to joining the Belfer Center, Dr. Norberg-Bohm was an assistant professor in the Department of Urban Studies and Planning at MIT. While at MIT, she was co-PI of the Environmental Technology and Public Policy Program, and part of the research team on “Creating Incentives for Environmentally Enhancing Technological Change” at MIT’s Center for Environmental Initiatives. From 1998-1999, she was also co-Director of the Program for Environmental Education and Research, which focused on developing multidisciplinary educational initiatives. She has a Ph.D. in Public Policy from Harvard University. Prior to returning to school to pursue a Ph.D., she was a practicing engineer in the area of energy and environmental systems. She has a M.S./B.S. in Mechanical Engineering from Washington University in St. Louis.

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John B. Heywood

Professor Heywood did his undergraduate work in Mechanical Engineering at Cambridge University and his graduate work at MIT. He then worked

for the British Central Electricity Generating Board on magnetohydrodynamic power generation. Since 1968 he has been on the faculty in Mechanical Engineering Department at MIT, where he is now Director of the Sloan Automotive Laboratory and Sun Jae Professor of Mechanical Engineering. His current research is focused on the operating, combustion and emissions characteristics of internal combustion engines and their fuels requirements. He is involved in studies of automotive technology and the impact of regulation. He is also working on issues relating to engine design in MIT's Leaders for Manufacturing Program; he was Engineering Co-Director of the Program from 1991-1993. He is currently involved in a major study of future road transportation technology and fuels. He has published over 160 papers in the technical literature and has won several awards for his research publications. He holds an Sc.D. degree from Cambridge University for his published research contributions. He is the author of a major text and professional reference "Internal Combustion Engine Fundamentals," and co-author with Professor Sher of "The Two-Stroke Cycle Engine: Its Development, Operation, and Design." From 1992-1997 he led MIT's Mechanical Engineering Department's efforts to develop and introduce a new undergraduate curriculum. In 1982 he was elected a Fellow of the Society of Automotive Engineers. He was honored by the 1996 U.S. Department of Transportation Award for the Advancement of Motor Vehicle Research and Development. He is a consultant to the U.S.

Government and a number of industrial organizations. He was elected to membership in the National Academy of Engineering in 1998. In 1999, Chalmers University of Technology awarded him the degree of Doctor of Technology honoris causa. He was elected a Fellow of the American Academy of Arts and Sciences in 2001.



Nancy Mohn

Nancy Mohn is responsible for managing the strategic marketing activity as well as marketing communications for ALSTOM's Utility Boiler Businesses. These businesses represent a \$1 billion plus division which supplies power generation systems and services to domestic and international utilities, industries, and independent power producers.

Ms. Mohn has more than 20 years experience in the power industry beginning in a technical role as a research

and product development engineer, working hands-on with power generation equipment operators, followed by expanded responsibilities in marketing and strategic business development. She has significant experience in technology commercialization for industrial markets, including the evaluation of environmental issues related to power generation technologies. A registered professional engineer, Ms. Mohn holds a patent for an intelligent chemistry monitoring system for steam generators, and has authored numerous technical papers in the industry.

She is an active participant in a number of industry related activities, including the MIT Forum on Global Climate Change and the Aspen Institute's Energy Policy Forum. In addition, Ms. Mohn serves on the Advisory Board for Engineering Education at Penn State University.

She received a BS in Civil Engineering from Penn State, an MS in Civil and Environmental Engineering from the University of Wisconsin, and an MBA from the University of Connecticut.

John T. Preston

Mr. Preston is President and CEO of Atomic Ordered Materials LLC., (AOM) and Senior Lecturer at the Massachusetts Institute of Technology. Before joining AOM, Mr. Preston started Quantum Energy Technologies Inc., which is commercializing environmentally clean combustion technologies. Prior to Quantum Energy he



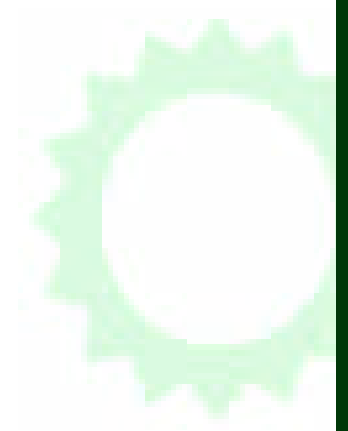
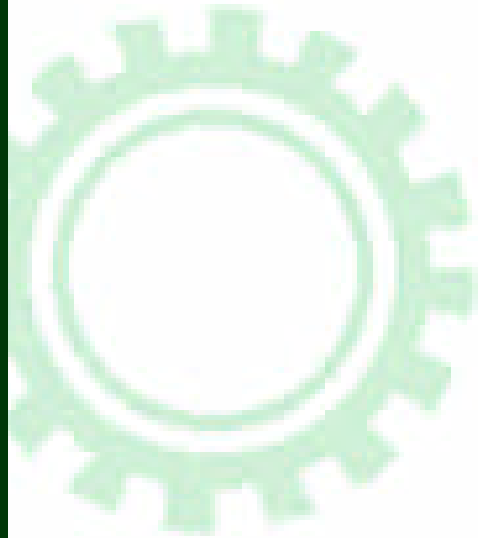
was the Director of Technology Development at M.I.T., where he was responsible for the commercialization of intellectual property developed at M.I.T. In this capacity he participated in founding dozens of technology based companies as well as negotiating hundreds of licenses to existing companies. The market capitalization of the companies founded by his office is currently greater than \$20 billion.

Mr. Preston is also Chairman of Quantum Catalytics and Director of Clean Harbors Corporation.

Prior appointments include director or advisory positions for the Governor of Massachusetts, the US Department of Defense, the National Aeronautics and Space Administration, the National Science and Technology Board of Singapore and several others. Mr. Preston has testified seven times before the US Congress on issues related to technology commercialization and has chaired meetings of this subject for President George H. W. Bush and

H.R.H. Prince Charles among others.

Mr. Preston received a Bachelors of Science in physics from the University of Wisconsin and a Masters of Business Administration from Northwestern University. He is the recipient of numerous awards and honors, including the Thomas Jefferson Award, given to the leading American in technology transfer and the Renaissance Engineering and Science Award from Stevens Institute of Technology. President Mitterand named Mr. Preston “Knight of the National Order of Merit” of France. Mr. Preston is also an Honorary Alum of the Massachusetts Institute of Technology. Mr. Preston, in 1999, received the “Hammer Award” from Vice President Gore for reinventing Government. He is the only civilian to receive this award.



Microtechnology: is it only computer chips, or is it something more? There was a time when the word called to mind images of transistors built on a silicon wafer, or perhaps the circuit board found inside an old Apple II. Today, the technology has progressed far beyond that with computer processing speeds reaching over 2 GHz and novel applications for MEMS and silicon wafer fabrication technology appearing every day. The field is no longer limited to electrical and computer engineering: microscale devices can be found in biotechnology, robotics, and aerospace, among other industries. So what can we do today and where is this all going? What does the future hold for this fast-developing technology? This panel will take a look at current trends in tiny, micro-, nanotechnology and where they will be headed. Moderator: Lionel Kimmerling, MIT Materials Science.



Qing Ma

Qing Ma is a technical manager at the Intel Labs. Since joining Intel in 1994, his research interests have included effects of chemistry and plasticity on interface adhesion for various thin films used for IC interconnects, slow crack growth in interconnect structures due to moisture and temperature cycling, advanced packaging technologies such as BBUL, and most recently, design and characterization of MEMS devices. Ma received his BS degree in physics from Zhejiang University in 1984 and his PhD degree in physics

from MIT in 1991. As a postdoctoral fellow at UC - Santa Barbara between 1992 and 1994, he co-developed techniques of using the piezospectroscopic effects of optical fluorescence to measure localized stresses in composites and microelectronic devices. Ma has co-authored more than 40 papers in materials and mechanics, and he is co-inventor on five patents.



Jeffery Andrews

Jeff Andrews joined Atlas Venture in 2001. Most recently, he was at Intel Capital, where he invested in early-stage optical networking companies. Prior to that, Jeff spent four years as an optical engineer and program manager at Becton Dickinson BioSciences,

commercializing optical instrumentation for genomics applications. During the previous five years, he was at Lockheed Martin Aero and Naval Systems, developing fiber optic technology. Jeff holds five patents, four in fiber optics and one in biotechnology. He was twice named Inventor of the Year at Lockheed Martin Aero and Naval Systems. Jeff has a BS in Physics from the State University of New York in Binghamton, a Masters in Electrical Engineering from Virginia Tech and an MBA from Johns Hopkins University.



Mark Spearing

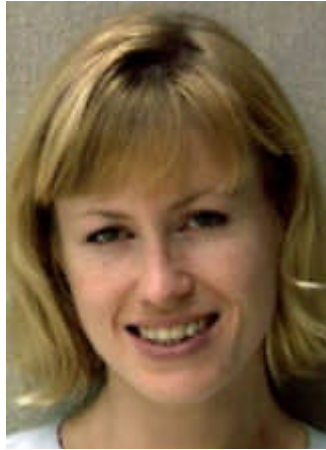
His technical interests include materials and structural analysis and design of MEMS, electronic packages and advanced composites. Spearing was chairman of the AIAA Materials Technical Committee from 1998-2000, a member of the American Ceramic Society, ASME and MRS and a deputy editor of Acta Materialia. Since 1995 he has been responsible for materials, structural design and packaging tasks of the MIT MicroEngine, MicroRocket, Micro-chemical power and MicroHydraulic transducer

projects as well as conducting cross-cutting underpinning technology development.



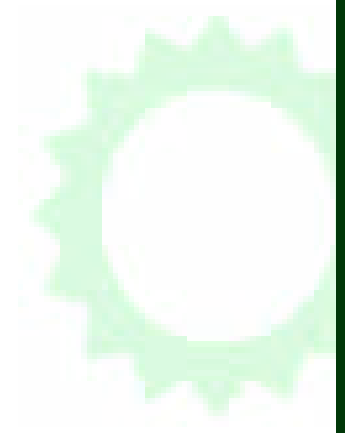
Amy Duwel

As an undergraduate, Amy's interest in astronomy led her to a fascination with the CCD cameras and the super-cooled Josephson junctions which are used to detect light. After receiving a BA in physics from Johns Hopkins University, Amy did her graduate work at MIT in the Electrical Engineering and Computer Science Department. Here she studied Josephson Junctions and the nonlinear dynamics of junction networks. After receiving her PhD in 1999, Amy went to Draper Laboratory, where she currently studies Micro-electro-mechanical Sensors (MEMS). Her research focuses on the dynamics of MEMS resonators and their applications as inertial sensors, RF filters, and chemical detectors. Amy is also currently a resident advisor at Harvard, where she serves as a mentor and tutor to undergraduates.



Tanya Kanigan

Tanya Kanigan grew up in western Canada, studied Chemistry and Physics as an undergraduate at Carleton University in Ottawa, and then earned a Ph.D. in Chemistry from McGill University in 1996. Her doctoral work involved using integrated optics techniques to study polymer thin films. After finishing her thesis, she came to MIT to do postdoctoral research in an ultrafast spectroscopy lab in the Department of Chemistry. In her second year at MIT, she joined Professor Ian Hunter's lab in the Department of Mechanical Engineering. There, she contributed to several projects including polymer artificial muscle technology and a nano-fluidic microarray technology called the Living Chip. In the fall of 2000, she left MIT to join BioTrove, a company founded by herself, Professor Hunter, and three other researchers from the Department of Mechanical Engineering. At Biotrove she is continuing to develop the Living Chip microarray technology which the company licensed from MIT.



Conference Director

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