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## Major project seeks to enhance undergrad curriculum with more 'hands-on' learning

An initiative to improve the MS&E undergraduate computing and laboratory teaching facilities, begun in late 2001, is well underway with the appointment of a project coordinator, the donation of new computing equipment, and a matching-grant pledge of up to \$250,000 from an anonymous donor.

Alison Shull, a Cornell MS&E graduate and a Ph.D. in applied physics from Harvard, was hired to spearhead the project. Working with faculty members and undergraduate laboratory manager Cris McConkey, she is coordinating the development of laboratory modules that will reinforce and expand on concepts from lectures and provide students with "hands-on" learning experiences. She is also coordinating the fundraising for the project.

A significant objective was achieved in March with the award of an Intel Corporation Academic Relations Equipment Grant. The grant provides 23 computer systems and wireless network equipment. Ten workstations will replace older equipment (donated by Intel in 1998) and allow

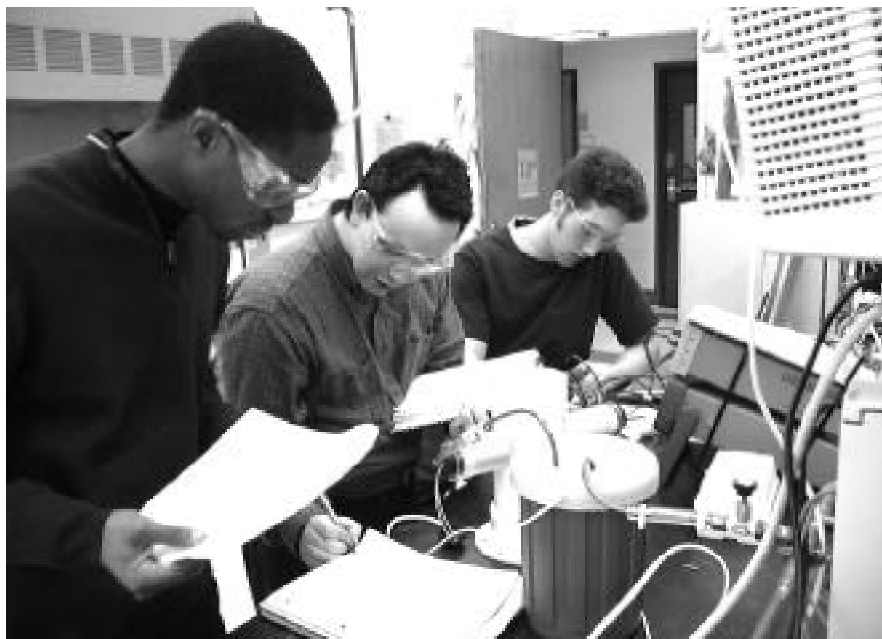
for further integration of computer simulation, modeling, and image analysis into course work. The remainder will be used in the teaching laboratory for instrument control and data acquisition and analysis in lab modules for MS&E lecture courses, as well as for the senior lab course.

To meet the matching-grant provisions of the \$250,000 gift, proposals are being drawn up for funding from government agencies and for equipment donations from corporations.

"We are delighted that the fundraising efforts for this initiative are already receiving positive responses from corporate and private donors," said department director Christopher Ober. "And we encourage alumni to contact Alison Shull with any ideas they may have for enhancing MS&E undergraduate education."

*Below: In an MS&E undergraduate laboratory, students in a course on electronic, optical, and magnetic properties of materials measure the conductivity of germanium.*

*One of the upgrades to be made in the undergraduate laboratories is the installation of new computing equipment.*



### *To alumni: a special request*

Please send us comments on your laboratory experiences as an undergraduate or as a teaching assistant. What did you appreciate or what did you miss? What would have been an effective hands-on learning experience for you? Do you have ideas for experiments or in-class industrial case studies or leads for grant opportunities?

Alison Shull suggests recollections in various categories: humorous, disastrous, laborious, victorious (i.e., you gained life-long knowledge). We'll use them for inspiration in brainstorming for new lab modules, she says. And we'll post some in the new lab facility to inspire (or perhaps warn!) students.

Send comments to Alison Shull's attention at [matsci-mailbox@cornell.edu](mailto:matsci-mailbox@cornell.edu) or to her by mail at MS&E, Cornell University, Bard Hall, Ithaca, NY 14853.

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## FROM THE DIRECTOR



Probably the biggest news—affecting all the departments in the College of Engineering—is that we will have a new dean this July. W. Kent Fuchs comes to Cornell from Purdue, where he heads the School of Electrical and Computer Engineering. The college owes Harold Craighead (A&EP) a debt of gratitude for serving as the interim dean since last summer.

Department news that gives me pleasure to report is Yuri Suzuki's early promotion to tenure. Yuri has built an outstanding research program and is active in departmental affairs. She served on the search committee for the new dean and chairs the MS&E curriculum committee.

As is evident in various articles in this issue, research activity continues to thrive in MS&E. Notably, it involves undergraduate as well as graduate students; much of it involves interaction with researchers in other disciplines and in industry; and the areas of investigation are important and leading-edge. Nanotechnology, for example, is getting a lot of attention, even from students; for example, a 100-level course in this subject, taught by Emmanuel Giannelis, attracted the unusually large enrollment of 124 students.

In my last column, I discussed the important role of alumni in the success of the department. As noted in this issue, two of our graduates are currently back in Bard Hall, helping us: Alison Shull, who is heading the undergraduate laboratory project, and Charlie Tracy, who is sharing with our students insights from his long career in industry. One of Charlie's valued contributions is his support for our annual Herbert H. Johnson Memorial Lectures; we are looking for other alumni who would like to join him in recognizing the importance of materials and honoring the memory of Herb Johnson.

We look forward to the second meeting ever of our Advisory Council late this month. The broad-based experience of the members is invaluable and the board will continue to play an important role in the years ahead. Let me close by saying that the members of the Bard Hall materials community welcome back our alumni at the next Cornell reunion.

— Christopher Ober, Director, Department of Materials Science and Engineering

### Current Members of the Advisory Board

Dr. Duane Dimos,  
Sandia National Laboratories  
Dr. Lina Echeverria,  
Corning, Inc.  
Prof. Katherine Faber,  
Northwestern University  
Dr. Keith Horn,  
Corning Incorporated  
Dr. William R. Lafontaine, Jr.,  
IBM Microelectronics  
Dr. Angelo Lamola,  
Rohm & Haas  
Dr. Bruce Losee,  
Chrysalis Technologies  
Dr. Gerald Marcyk,  
Intel Corporation  
Prof. William Nix,  
Stanford University  
Dr. Romek Nowak,  
Applied Global University  
Dr. Hira Thapliyal,  
MedVenture

### Members in 2001

Prof. Reza Abbaschian,  
University of Florida  
Prof. David Kohlstedt,  
University of Minnesota

## Advisory Board begins its second year of service to the department

The Advisory Board for the Department of Materials Science and Engineering will come to Cornell for its second meeting on May 29 and 30. Formed in early 2001, it met for the first time that May.

At the first meeting the board members reviewed a strategic plan for the department, as well as its organization, research thrusts, current and planned curricula, strengths, and challenges. The members met with faculty and undergraduate and graduate students.

In an ensuing report, the board identified key challenges and opportunities; these included faculty recruitment to maintain broad-based teaching coverage while developing new areas of research; enhancement of faculty diversity; and additional funding for graduate research.

The report also cited successes and strengths; these included the interdisciplinary nature of research, funding for research, the exemplary access students have to the faculty, the high caliber of students, and the potential for additional research partnership with leading industries.

On the basis of the board's recommendations, several initiatives have been undertaken. These include a pilot Ph.D. co-op program, a revitalization of teaching laboratories, and strategies to attract and retain top undergraduate and graduate students.

## W. Kent Fuchs named dean of the College of Engineering

W. Kent Fuchs, head of Purdue University's School of Electrical and Computer Engineering, has been named the Joseph Silbert Dean of the College of Engineering, effective July 1.

Fuchs came to Purdue in 1996 and previously was on the faculty of the University of Illinois.

He earned a B.S. degree at Duke University in 1977, an M.S. at Illinois in 1982, a master's degree at Trinity Evangelical Divinity School in 1984, and the Ph.D. in electrical engineering at Illinois in 1985.

His current research interests include dependable computing, testing, and failure diagnosis. He is a fellow of the Institute of Electrical and Electronic Engineers and the Association of Computing Machinery.

## Yuri Suzuki promoted to tenured faculty in MS&E

Yuri Suzuki, a member of the MS&E faculty since 1997, was promoted to associate professor last fall, and is currently planning a sabbatical-year program.

She will begin her year's leave with a five-month stay at IBM at Almaden, where she will conduct research on nanomagnetism. During this period, she will also work with researchers at Stanford University's synchrotron facility.

The research will focus on understanding the fundamental mechanisms behind magnetization reversal in patterned magnetic media, in contrast to the unpatterned magnetic materials used in present storage media. She will interact with industrial scientists and learn more about technological issues involved in magnetic storage.



Suzuki

Award from the Minerals, Metals & Materials Society, and a David and Lucile Packard Foundation Fellowship.

Suzuki graduated with an A.B. in physics from Harvard University and received her Ph.D. in applied physics from Stanford in 1995. Before coming to Cornell, she was a postdoctoral member of the technical staff at Bell Laboratories.

She has received a Young Investigator Award from the Office of Naval Research, a Faculty Early Career Development Award from the National Science Foundation, the Robert Lansing Hardy

## Julie Delay appointed to departmental administrative post

The MS&E department once again has a full-time director of administrative operations. Julie Delay, who has been a Cornell administrator for the past 12 years, assumed the office in mid-February.



Julie Delay, at right, keeps in touch with Alison Shull concerning plans for upgrading the undergraduate laboratories.

Another recent appointment is that of Alison Shull, an MS&E alumna who will be helping to develop the laboratory component of the undergraduate program for the rest of the year 2002.

Delay succeeds Alton H. Clark, who had served part-time as interim director since last July. Clark, who had recently retired as associate director of the Cornell Nanofabrication Facility, took on the administrative responsibilities because of the illness and death of Robert A. Geyer.

Delay's experience at Cornell includes ten years at the College of Architecture, Art and Planning, where she worked in the areas of finance and human resources. Most recently she was the associate bursar for student accounts in the university's Office of the Bursar.

She holds an undergraduate degree in management science and a master's degree from Cornell's School of Industrial and Labor Relations.

Shull received baccalaureate degrees in both MS&E and Asian Studies from Cornell in 1988, and the Ph.D. in applied physics from Harvard in 1996. She has worked at the IBM Almaden Research facility in San Jose, at the Hitachi Semiconductor Technology Development Center in Tokyo, and at Teradyne in Boston, and has also served as an independent business and technology consultant.

## PLAYTIME event amazes and instructs prospective students

Materials science was a big hit at PLAYTIME on campus Saturday afternoon, April 20, as part of Cornell Days for some 200 high school seniors who have been accepted to Cornell. Tables were set up by various student groups, including the Materials Research Society student chapter.

The MRS display featured demonstrations of a wide range of impressive materials. Some of these were shape memory alloys which "magically" return to a specific shape when heated; a levitating superconductor; a ceramic hammer that does not shatter; and a polystyrene sample that flew apart with the addition of acetone.

A display on manufacturing featured the ways in which photoresists and masks are used in production. In a bar-bending contest, contestants tried their luck with bars of pure aluminum or of stronger aluminum/copper alloy. Electronic devices,

biomaterials, turbine blades, and polymer products were among samples displayed.

Professor Stephen Sass stopped to answer students' questions, and a digital movie showed Professor Shefford Baker, well protected with face shield and rubber gloves, demonstrating how treatment with hydrofluoric acid can strengthen a glass rod.

MRS members, headed by junior Sarah Rosenstein, helped organize the presentations, staff the tables, and conduct experiments. The student participants were seniors Ken Diest, Louis Klapp, and Jarrett Silver; Hester Chan, a junior; and sophomores Ben Dworken, Hesham Khalifa, Aaron Kueck, Conrad Lovell, Sara Parker, and Emily Walton.

PLAYTIME was sponsored by minority and women's programs at the university. Groups represented included not only SWE, but several other engineering student organizations.

# Wiesner's research group introduces a new class of material: flexible ceramics

*Nanostructured hybrids mimic a replication process found in nature*

*Below: Transmission electron micrographs demonstrate the unprecedented structural control possible with the procedure for synthesizing flexible ceramics. The organic/inorganic hybrid materials have nanoscale structure.*

*The procedure uses a block copolymer (a poly-isoprene-block-ethylene oxide) as the structure-directing agent for a silicon-based ceramic. The process involves sol-gel chemistry and the formation of an alumino-silicate phase in which the aluminum acts as a network hardener of the organic-inorganic matrix.*

Flexible ceramics—a new kind of material that combines properties of ceramics and all-organic polymers and has a wide range of potential applications—have been synthesized by the research group of Ulrich Wiesner, associate professor of MS&E.

The development of the materials, described as nanostructured organic/inorganic hybrids, was reported by Wiesner in a talk at the annual March meeting of the American Physical Society. He characterized the new field as “an exciting, emerging research area offering enormous scientific and technological promise.” The potential applications range from microelectronics and battery and fuel-cell components all the way to catalysis and the separation of proteins.

The materials synthesized so far are hybrids of a diblock copolymer and a silica-based ceramic. The resulting structures exhibit a combination of properties: flexibility and structure control from the polymer and functionality from the ceramic.

The underlying idea for the research was to use a nanoscale process to “mimic” natural replication processes in which organic components of a micro-organism direct the growth of inorganic materials to form perfect, symmetrical shapes. One example in nature is the structure of diatoms, single-celled organisms whose amorphous silica shell walls consist, for example, of hexagonally arranged pores.

Nature's key to this replication, Wiesner says,

is “perfect shape control governed by self-assembly of organic components directing inorganic materials' growth.” A similar replication process has been achieved in synthetic materials by Wiesner's group; indeed, in some cases, the materials created in the laboratory have a hexagonal symmetry that closely resembles that of diatom shell structures. Wiesner believes that because of the new material's self-assembling ability, it could be produced in large batches.

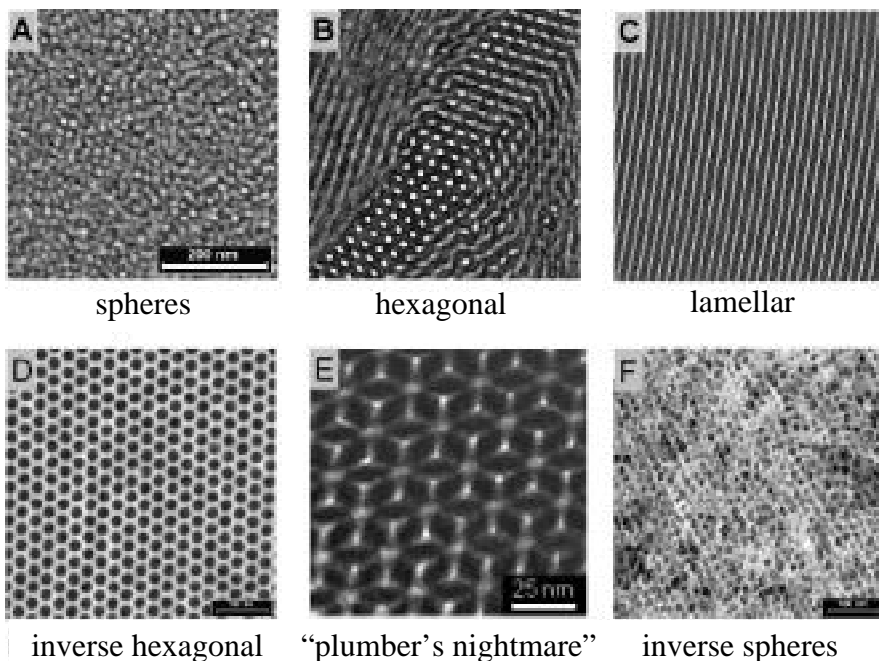
Diblock copolymers used in the synthesis have the ability to self-assemble chemically into nanostructures with different symmetries. When these are integrated with the silica-based ceramic, the resulting material, Wiesner said, “has properties that are not just the simple sum of polymer plus ceramic, but maybe something new.” Samples made so far are transparent, flexible with considerable strength, and do not shatter as pure ceramic would.

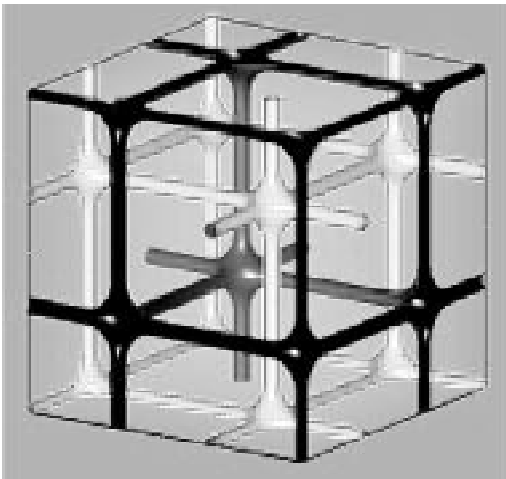
A particularly fascinating synthetic flexible ceramic structure, referred to as the “plumber's nightmare” because it is so convoluted, was recently developed at Cornell in a collaboration between Wiesner's group and that of Sol Gruner, professor of physics. A finding that was striking to the researchers is that, as shown by transmission electron microscopy, this experimentally produced cubic bicontinuous structure corresponds to structures that long ago were predicted mathematically.

The flexible ceramic with “plumber's nightmare” morphology evolves into a mesoporous structure when the material is heat-treated at high temperature. This is the first material with such a symmetry and narrow pore-size distribution; the pores are only about 10 nanometers across. The researchers are now starting to collaborate with Larry Walker, Cornell professor of biological and environmental engineering, to investigate the possible use of these materials in the separation of cell-wall proteins.

“We have perfect structure control,” Wiesner said. “We can structure the material down to the nanoscale with unprecedented control. We know how to make a suite of structures of assorted shapes and pore sizes.”

The researchers can do this by controlling the “phases,” or molecular architectures, of the material by controlling the mix of polymer and ceramic. The material goes through several shifts in shape, as shown in the figure. The cubic





*Diagram showing the complex molecular architecture of the cubic bicontinuous structural phase called the "plumber's nightmare."*

*The high degree of order and symmetry of the structure was shown by X-ray diffraction. Transmission electron microscopy showed pores only about 10 nanometers across.*

bicontinuous structure is the convoluted "plumber's nightmare," a "nano-network" not previously known to exist in polymer systems. Because of the three-dimensional accessibility to the pores, it appears ideal for such applications as nanoscale separation and catalysis.

The "plumber's nightmare" may be only the first of these highly convoluted structures made possible by the specific combination of polymers and ceramics, Wiesner believes. "There is a good chance that we will find a whole zoo of other bicontinuous structures that people didn't know existed in polymers," he said. "We have opened the avenue to finding such structures."

Wiener's current group at Cornell includes three postdoctoral researchers—Yuanming Zhang, Jochen S. Gutmann, and Byoung-Ki Cho; six graduate students—Phong Du, Carlos Garcia, Jon Hughes, Anurag Jain, Surbhi Mahajan, and Hooisweng Ow; three undergraduates—Jeffrey Biser, Kyong Park, and Eric Verploegen; and a visiting student, Sebastian Nett.

Other Cornell collaborators include Adam Finnefrock, postdoctoral associate in physics (a member of Gruner's group) and Ralph Ulrich and Hans Spiess of the Max-Planck Institute for Polymer Research in Germany. The work is supported by the National Science Foundation, the Max-Planck Society, and the Cornell Center for Materials Research.

*For more information about this research, see [www.ccmr.cornell.edu/%7Euli/carlos1.html](http://www.ccmr.cornell.edu/%7Euli/carlos1.html).*



*Ulrich Wiesner joined the Cornell faculty in 1999. He received his Ph.D. from the Max-Planck Institute for Polymer Research in Mainz, Germany, and has held research positions there and in Paris. He finished his Habilitation in physical chemistry in 1998, and the following year received the Carl Duisberg Memorial Award of the German Chemical Society.*

## MS&E researchers develop DNA chips

The development of electronic chips that could detect and analyze DNA samples is the goal of a research project at Cornell in which

**N**anoscale science and technology is a high priority nationally, as indicated by the impending establishment of federally funded national centers for research in these areas.

A Department of Energy panel is currently reviewing plans for a number of Centers on Nanoscience to be established by the DOE at the National Laboratories. MS&E Professor Dieter Ast is serving on the panel. These new centers will be funded in the \$60 million to \$90 million range and will have annual operating budgets of about \$15 million.

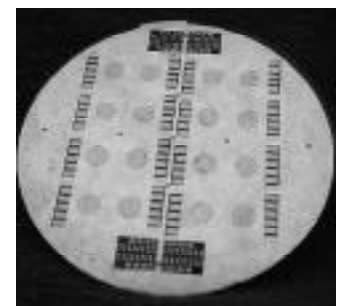
The DOE-sponsored centers are in addition to six Nanoscale Science and Engineering Centers to be established by the National Science Foundation. One of these, the Center for Nanoscale Systems in Information Technology, will be located at Cornell.

three MS&E faculty members—Dieter Ast, George Malliaras, and Emmanuel Giannelis—are participating.

The project is part of a research initiative of the Alliance for Nanomedical Technologies, an interdepartmental group at Cornell funded by the New York State Science and Technology in Academic Research program. The Alliance is headed by Carl Batt, professor of food science.

The object of the work at MS&E is to develop novel, transistorized chips that could be used in DNA analysis for medical purposes. A drop of a sample to be analyzed would be placed on the chip, which would detect any matches with strands of DNA positioned on the device.

Several approaches are being followed. Researchers in Ast's group are developing a technology using thin semiconductor transistors fabricated on glass slides. Malliaras and his group are investigating the use of thin-film transistors made of organics on polymer substrates. Giannelis' group is working on procedures for fixing a specific segment of a DNA chain to each transistor.



*Above: A DNA-analyzing device fabricated on glass is being developed in Professor Ast's laboratory.*

*Ast discussed another aspect of his research—the use of thin-film transistors for organic light-emitting diode displays—at a two-day workshop on OLEDs held at the Corning Incorporated headquarters in early April.*

## Two seniors receive special recognition

Two MS&E seniors received special honors during the year. Kenneth Diest was one of 40 students nationwide chosen last fall for a Materials Research Society award; and this spring Jonathan Eser was named a Merrill Presidential Scholar at Cornell.

Diest's award included a \$1,000 grant for research, which he conducted with Professor George Malliaras and graduate student Yulong Shen. At the spring MRS meeting in San Francisco, he presented a poster describing the research, titled "Charge Injection and Transport in Organic Semiconductors."

After continuing his research at Cornell over the summer, Kenneth plans to join Hewlett-Packard in Corvallis, Oregon, where he will help start up a nanofabrication division. After a few years, he plans to go to graduate school.

Previously, Ken was awarded a Cornell Alumni Undergraduate Research Grant. He was on the Dean's List for four semesters, served as vice president of the MRS chapter, and is a member of the materials science honor society Alpha Sigma Mu.



*Diest*



*Eser*

Eser was one of 35 Cornell seniors nominated by their college deans for the Merrill scholarship on the basis of scholastic achievement, leadership, and potential for contributing to society.

Each selected student recognizes a high school teacher and a Cornell faculty member who were especially influential. Eser named Tom Kranning, his high school football coach, and Professor Yuri Suzuki, in whose research group he worked for two years.

Coach Kranning will be honored at a convocation on campus, and a \$4,000 scholarship in his name will be awarded to a Cornell student from his school or area.

At Cornell, Eser is a member of the engineering honor society Tau Beta Pi, the men's lacrosse team, and the Navy ROTC unit.

After graduation, he will work for five years in the Navy's division of naval reactors, designing, maintaining, and disposing of nuclear reactors on board ships and submarines.

## CCMR program reaches out to area schools

*Below: At Ithaca High, Ober demonstrates the way that liquid nitrogen can freeze rubber into the glassy state. Ober was assisted by Qing Wang, a post-doc in his group, and Gina Weibel, a graduate student.*

High school students in the region near Cornell are finding out about the field of materials science through an outreach program that involves faculty members and graduate students in MS&E.

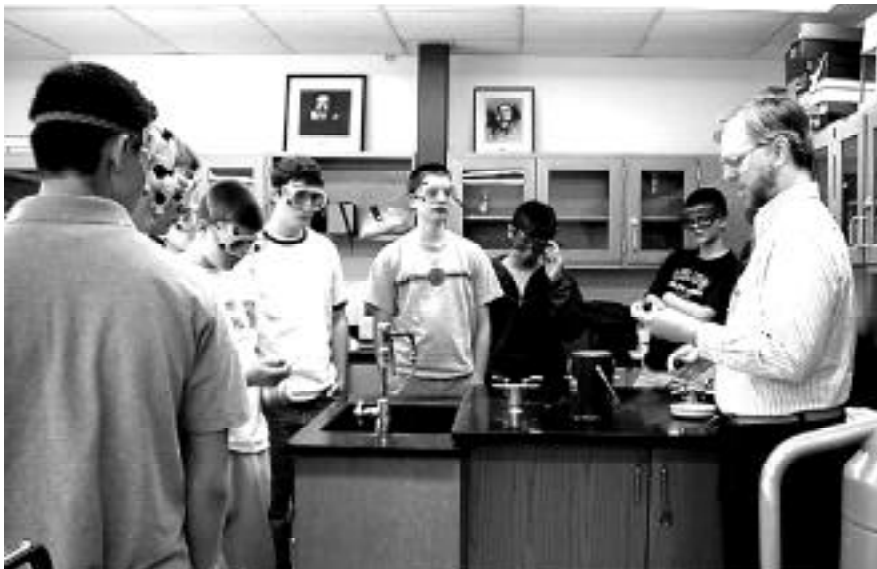
The program is offered by the Cornell Center for Materials Research and coordinated by Nev Singohta. CCMR, an interdepartmental group, has funding from the National Science Foundation and the State of New York.

In March, for example, Professor Christopher Ober spent two days at Ithaca High School, where he met with seven chemistry classes to discuss materials science and how it is related to other scientific disciplines. His presentations included a slide show and demonstrations. Included were experiments showing the effect of heat and cold on rubber, ceramics that don't shatter, and polymers and nanomaterials that stretch.

Next month a program for homeschoolers in the area will feature a demonstration, devised by Professor Dieter Ast, of how berry juice can be used in constructing a dye-sensitized solar cell. Cornell participants will include Singohta from CCMR, and graduate student Daniel Schmidt and technician Cris McConkey from MS&E.

In addition to its outreach program for students in grades K-12 and their teachers, CCMR maintains links to industry through a program of industrial outreach and technology interchange.

Another aspect of the CCMR outreach program is a weekly feature, "Ask a Scientist," in the local newspaper. A question submitted by a student in a local school is answered by a Cornell faculty member or graduate student. Participants from the MS&E faculty include Dieter Ast, Shefford Baker, Stephen Sass, and Yuri Suzuki.



# Alumnus with Long Industrial Career Gives Students Insights on Opportunities in the “Real” World

“**A** Technologist in the Business World: Life after Cornell” was the title of a talk given here in April by Charlie Tracy, Ph.D. ’68, who retired in 2000 as director of the United Technologies Research Center.

The title refers to his long career in industry, and it is indicative as well of the experience and expertise he has to offer in his current life at Cornell: he is now a visiting scientist in MS&E. The seminar at which he spoke was sponsored by the Materials Research Society chapter at Cornell.

As a graduate student at Cornell, Tracy studied surface physics with MS&E Professor Jack Blakely, and received his Ph.D. in applied physics. As an alumnus, he serves on the Advisory Board of the Cornell Center for Materials Research (CCMR) and he is active in supporting the annual Herbert H. Johnson Memorial Lectures commemorating the late MS&E professor and director of the department and of the Materials Science Center, the forerunner of CCMR.

During the seminar, Tracy led the students on a tour of his career in industry, which began with research and development positions at Rockwell Science Center. From 1973 to 1992, he held leadership and management positions at General Motors Research Laboratories—first in the Physics and Electronics Departments and then as chief engineer in Delco Electronics, a GM subsidiary, in the areas of solid-state products, integrated circuits, and audio systems.

He joined United Technologies in 1992. There he served as vice president, Carrier Electronics, and then as president of the Carrier Components group. He served as an operations consultant for Carrier’s European Transcontinental Operations and as integration manager for joint ventures in Israel and Turkey. Finally, he came “full circle” back to research as director of the Research Center from 1998 to 2000.



Tracy

This satisfying and rewarding career was not the result of careful planning, he emphasized, but rather of his inclination to be open to opportunities as they arose. He engaged the students in a discussion of “valuation of personal attributes,” using an analogy to customer valuation of products. The most valuable people, he said, are those with a range of attributes that extends beyond the expected technical skill and problem-solving ability to qualities such as “personal responsibility,” “love of ambiguity,” and “appreciation of diversity.”

Case studies illustrated this attitude. The first told of his experience managing the creation and development of a new supermagnet for electric motors. He presented a holistic overview, including not only technical challenges, but also economic pressures and some challenging group dynamics. The project resulted in the invention of Magnequench, an entirely new magnet material, for which the American Physical Society’s New Materials Prize was awarded.

The second case study was of his experiences leading a team at Delco toward the “stretch goal” of making a 50 percent annual improvement in the Audio System warranty. Here he emphasized the challenges of achieving customer satisfaction in large, complex organizations.

*The talk was very informative, relaxed, and fun. I think it was beneficial because it showed that an engineering degree has such a wide range of potential and use in the “real world.”*

— Sarah Rosenstein ’03

## MS&E group hosts international workshop on stress in nanofabricated metal layers

**T**he Sixth International Workshop on Stress-Induced Phenomena in Metallization was held at Cornell on July 25–27, 2001. The workshop was organized and hosted by MS&E Professor Shefford Baker and his students Jonathan Shu, Prita Pant, and David Nowak. The proceedings have just been published by the American Institute of Physics (AIP).

This workshop was the latest in an ongoing series. The first was organized by MS&E Professor (now emeritus) Che-Yu Li and was held at Cornell in 1991. Subsequent sessions were held at the University of Texas in 1993, Stanford University in 1995, the University of Tokyo in 1997, and the Max-Planck-Institut

für Metallforschung in Stuttgart in 1999.

These workshops provide a forum for authoritative presentations and high-level discussions on issues related to stresses in thin metal layers used in nanofabrication, Baker said. Such layers are found in integrated circuits, micro- and nanoelectromechanical systems (MEMS and NEMS), and other devices.

Despite a severe downturn in the microelectronics industry, the workshop was well attended, with about 60 participants from Asia, Europe, and the United States. Industry and academe were about equally represented. Participants ranged from graduate students to industrial research and development and production managers.

Copies of the workshop proceedings (AIP Conference Proceedings, vol. 612, April 2002) are available to individuals at the 35 % discount price of \$94.25 from the American Institute of Physics. Orders must be placed by June 30, and the code number AIP612 should be given. To order, contact Springer-Verlag by phone at 1-800-SPRINGER or by e-mail at [order@springer-ny.com](mailto:order@springer-ny.com).

# Alumnus wins prize for startup company idea

Plans for a startup company have won a prize for MS&E alumnus Shahyaan Desai '99 and his Cornell team— Professors Michael Thompson of MS&E, Anil Netravali of the College of Human Ecology, and S. Leigh Phoenix of Theoretical and Applied Mechanics.

The idea for the startup company, Nanofabrix, won second place in the second annual Business Idea Competition sponsored by the Cornell Big Red Venture Fund.

The competition, sponsored by MBA students and entrepreneurial-minded alumni and faculty from Cornell's Johnson School of Management, provides a forum for Cornell-affiliated individuals to present new business concepts and to begin turning their ideas into viable businesses.

The prize included a cash award of \$2,500. Also, the company will be considered for development support and/or investment by the Big Red Venture Fund.



Nanofabrix's plan targets high-resolution, large-area televisions and head-mounted imaging displays, and is based on development of novel materials and processing technologies for microelectromechanical (MEMS) devices.

*Above: Proudly displaying their (enlarged) prize check for \$2,500 are, left to right, team members Michael Thompson, Shahyaan Desai, and Anil Netravali.*

## ALUMNI NOTES

■ **Pablo D. deTorres**, M.S. '73, recently began a new job as an industrial liaison officer in the Office of Corporate Relations at the Massachusetts Institute of Technology.

■ **Troy Gras** '96 graduated from Mayo Medical School in 2000. He is now in residency in anesthesiology at the Massachusetts General Hospital in Boston.

■ **Henry Hendriks** '84 is currently a senior process engineer in the compound semiconductor wafer process production facility of M/A-COM, a division of Tyco Electronics. M/A-COM produces GaAs- and InP-based devices for RF wireless communication and optoelectronic applications. Hendriks earned a master's degree in electrical engineering at Northwestern University in 1990, while employed at Raytheon, and joined M/A-COM in 1999.

■ **Joe Johnson** '83 manages worldwide regulatory compliance for Microsoft products—particularly restrictions on hazardous materials in hardware products such as keyboards and mice.

■ **Woody Maynard** '97 is to receive two degrees from Northwestern University in June: the M.B.A from the Kellogg School of Management, and the M.E.M. (in engineering management) from the McCormick School of Engineering and Applied Science.

■ **Eugene Rhee** '01 is working as a process engineer in the chemical-mechanical polishing group at Samsung Austin Semiconductor in Austin, Texas.

■ **Daniel Ricoult**, Ph.D. '86, is employed at Corning Environmental Technologies in Corning, New York, as business technology director.

■ **Marshall Stocker** '97 earned the M.B.A. degree at Cornell's Johnson School of Management in 1999 and is currently a portfolio manager at Sanderson & Stocker in Ithaca, New York.

■ **Larry Stryker** '69 is a vice president and manager of product development at Chart Heat Exchangers in La Crosse, Wisconsin.

### Attention Alumni!

☞ Coming for Reunion? The department will host a breakfast for MS&E alumni and their families and friends on Saturday, June 8. The event will be held in 260 Bard Hall from 8:30 to 9:30. If you plan to attend, please contact Carol Armstrong at 607-255-9617 or ca20@cornell.edu.

☞ Please send us your e-mail address, with your degree and year of graduation to matsci-web@ccmr.cornell.edu. Want to view our list of alumni addresses on mse.cornell.edu? Click on People and then Alumni; the user word is "alums" and the password is "bardthurston."

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