New Faculty

The College of Engineering prides itself on recruiting faculty who are the brightest in their fields. We search for energetic people who will excite and enlighten our students and broaden the school's research base. Finding these people, just like teaching at CIT, is not an easy job. To start, all of our professors must demonstrate through their academic and professional credentials that they have the expertise to be an instructor at CIT. Just as important, however, they must possess the desire to teach and the ability to communicate well. Advising and counseling students is a vital part of a professor's job.

Outside of the classroom, our professors are expected to engage in research (which entails student participation), and they strive to publish their results in top journals. To fund their research, professors have to secure grants, which adds another dimension to their jobs, to say the least. Involvement in professional organizations is requisite, too.

Our newest faculty members have plenty of work ahead of them, but they're up to the challenge. The people you see on these pages will help our students realize their potential as they themselves embark upon their careers at CIT.

Michael Bockstaller
Materials Science and Engineering

His research focus is on the organizing principles in soft and heterogeneous materials, ranging from the molecular to the mesoscopic in scale, in the solid state and in solution. Since arriving at Carnegie Mellon, he has taught the undergraduate course, Introduction to Polymer Science and Engineering.

Bockstaller received his Ph.D. in Physical Chemistry from the Johannes Gutenberg University in Germany. He was a postdoctoral associate at the Massachusetts Institute of Technology. He is a fellow of the Alexander von Humboldt Foundation and Emmy Noether grant recipient of the German Science Foundation.

Nicolas Christin
Information Networking Institute (INi)

Christin, who is an INI faculty member and a Systems Scientist in CyLab, is currently a resident faculty member at CyLab Japan, in Kobe. His research interests are in computer networks and distributed systems, and are at the boundary of systems and policy research. His current focus is on digital rights management, notably poisoning of file-sharing networks; network security and its economics; and incentive compatible network topology design.

Onsite in Japan, Christin teaches Intro to Information Security and Security in Networked Systems. Christin holds a Ph.D. and M.S. from the University of Virginia and a Diplôme d’Ingénieur from École Centrale de Lille.

Kris Dahl
Joint appointment in Chemical Engineering and Biomedical Engineering

Dahl’s research uses rheological, biophysical and optical techniques to understand the structure and organization of the cell nucleus. These studies are relevant to dissecting the molecular pathology of diseases caused by defects in nuclear structure. In particular, her work deals with diseases of the nuclear lamina; stem cell differentiation and cancer progression; and mechanotransduction.

She received her Ph.D. from the University of Pennsylvania and her B.S. from Carnegie Mellon. Among her honors, she received the Ruth L. Kirschstein National Research Service Award, which is a post-doctoral research fellowship from the National Institutes of Health and a Whitaker graduate fellowship.

Mohammad Islam
Joint appointment in Chemical Engineering and Materials Science and Engineering

His work deals with the structure, dynamics and self-assembly of soft materials such as colloidal crystals and carbon nanotube assemblies. At CIT, he has taught the graduate course, Advanced Colloid and Surface Phenomena.

Islam’s research will support MSE’s efforts to expand in polymers and soft materials, and further broaden ChemE’s efforts in complex fluids engineering. Islam received his Ph.D. in Physics from Lehigh University.
He was a postdoctoral associate in the Department of Physics at the University of Pennsylvania.

John Kitchin
Chemical Engineering

In his research, Kitchin applies experimental and theoretical approaches to design alloy surfaces for catalytic applications that may be used in fuel cells. He will teach a sophomore-level course in mathematical techniques.

He received his Ph.D. in Chemical Engineering and M.S. in Materials Science and Engineering from the University of Delaware. Among his honors, he received an Alexander von Humboldt Postdoctoral Research Fellowship, and an American Vacuum Society Russell and Sigurd Varian Fellowship.

Yi Luo
Electrical and Computer Engineering

Luo’s research involves the design, fabrication, and characterization of novel nanoscale systems. Presently, he is focusing on nanoscale molecular electronics and aims to use specially designed molecules and other nano-components to build electronic systems for logic and memory applications. He is collaborating with researchers from the University of Pittsburgh in an effort to develop ultra-fast and extremely energy efficient sub-10nm molecular transistors. The goal is to build transistor-based systems that will be compatible with current hierarchical technologies.

Luo received his Ph.D. in Applied Physics from Columbia University in 2000. Afterward, he worked at UCLA and Caltech as a staff scientist, researching molecular electronic systems and other novel nanoscale systems for sensing and biological applications.

Ph.D., M.S. and B.S. in Electrical Engineering from Stanford.

Ken Mai
Electrical and Computer Engineering

Mai’s primary research interest is the circuit design of efficient, high-performance digital blocks (i.e. memories and functional units) in future generation technologies. In addition, he intends to build tools to export VLSI-level design information and constraints to architectural-level design. Currently at CIT, he is teaching Advanced Digital Integrated Circuits Design. Mai received his Ph.D., M.S. and B.S. in Mechanical Engineering from the University of Michigan.

Mai received his Ph.D. in Mechanical Engineering at the University of Pennsylvania.

Alan McGaughey
Mechanical Engineering

McGaughey’s research focuses on using numerical modeling techniques, notably molecular dynamics simulations, to understand the behavior of materials at the atomic level. While based in a mechanical engineering framework, his work draws from materials science, physics, and chemistry.

Current projects include an exploration of the relationship between the atomic structure and thermal transport properties of superlattices, and the identification of the mechanisms involved in the nanoscale oxidation of copper. This term, he is teaching the graduate course, Molecular Simulation of Materials.

Nisha Shukla
Institute for Complex Engineered Systems (ICES)

Her research focuses on protein folding, alphahelix structures, and the utilization of self-assembling nanoparticles to grow carbon nanotubes for use in electronic devices.

Shukla’s background is in surface chemistry and surface analysis of semiconductors and metal surfaces. Prior to joining ICES, she worked at Seagate Research, Pittsburgh, for five years. She obtained her Ph.D. at the University of Wales, College of Cardiff in the United Kingdom and did a post doc in ChemE at Carnegie Mellon.

In Memoriam
Hubert I. Aaronson, the Robert F. Mehl University Professor of Materials Science and Engineering Emeritus, died on December 13, 2003, following a lengthy illness. He was a faculty member in the Department of Metallurgy and Materials Science (1979-1991) and professor emeritus from 1991 until his death. Aaronson received his B.S., M.S, and Ph.D. in Metallurgical Engineering from Carnegie Mellon and was a staff member in the Metals Research Laboratory (1953-1957).

He was a member of the National Academy of Engineering and an Honorary Member of the Japan Institute of Metals. Throughout his career, he received many awards including the William Hume-Rothery Award and the C.H. Mathewson Gold Medal both from The Minerals, Metals & Materials Society (TMS), of which he was a Fellow.

Tina Wong
Information Networking Institute (INi)

Wong holds a Ph.D. and M.S. in Computer Science from the University of California at Berkeley. Prior to joining Carnegie Mellon, she was a member of the Network Science department at Packet Design in Palo Alto, California; and a research scientist at Hewlett Packard Laboratories and worked primarily in Tokyo.
Gregory S. Rohrer, the W.W. Mullins Professor of Materials Science and Engineering, has been named the head of the Materials Science and Engineering Department (MSE).

“T am very excited that he has accepted the charge to lead the MSE department,” says Dean Pradeep Khosla. “Greg has the interpersonal skills and the right vision to take the department to the next step.”

Ready for the task, Rohrer states that his initial goals focus on recruiting graduate students and developing new areas of research and education.

“Graduate students are at the heart of the department’s research,” says Rohrer, who began teaching at Carnegie Mellon in 1990. “To compete with peer institutions, we are developing strategies to recruit a diverse graduate student body of the highest quality and in sufficient numbers to advance our research goals.”

Regarding research, Rohrer says his aim is to “develop strong research programs in soft materials, multifunctional materials, and nanomaterials.” To this end, he adds, “two new faculty have been hired in the area of soft materials, and this will forge stronger connections between the biomedical engineering and chemical engineering departments. Through these interactions, we hope to initiate a biomaterials center.” The formation of a multifunctional materials center is also in the works. In addition, he says, “MSE faculty will lead nanomaterials efforts within the Center for Nano-Enabled Devices and Energy Technologies (see page 5).”

Rohrer is the director of the Materials Research Science and Engineering Center. In September 2005, the center announced that it will receive $6.5 million over the next six years from the National Science Foundation to continue creating new, super-efficient materials for various industries.

A Fellow of the American Ceramic Society, Rohrer has more than 120 publications to his credit and is the recipient of numerous awards, including: the Richard M. Furth Award, the Ross Coffin Purdy Award, and the Roland B. Snow Award all from the American Ceramic Society, and the National Science Foundation Young Investigator Award.

A respected educator, Rohrer has taught numerous courses, ranging from the influential Introduction to Materials Science and Engineering to Bonding and Defects in Materials. He is the author of the textbook, Structure and Bonding in Crystalline Materials.
and publisher of the journal Science, selects fellows from scientists who have made significant contributions in their fields.

Assistant Professor of MechE Philip LeDuc served on a panel created by the U.S. Senate and House of Representatives to help determine how federal policy makers could enhance science and technology-oriented enterprise in the U.S. In addition to LeDuc, Nobel Prize Winners Steven Chu and Robert Richardson served on the 12-person panel.

LeDuc also received a Beckman Young Investigator award that will fund his project, “Dissecting Cell Behavior through Spatiotemporal Cellular and Subcellular Control.” The Beckman program supports research for promising young faculty members in the early stages of academic careers in the chemical and life sciences.

Robert D. Tilton, professor of BME and ChemE, has been elected Vice Chair of the American Chemical Society Division of Colloid and Surface Chemistry for 2006. This position automatically transitions to Chair-Elect for 2007 and Chair for 2008.

Tilton also has been appointed by the Institute for Surface Chemistry (Ytskemiska Institutet AB, or YKI) in Stockholm, Sweden, as a YKI Ambassador. The YKI is an internationally leading research institute that serves 85 member companies.

People You’ll Want to Know

To be a member of the CIT community is to be a member of something great. The College of Engineering has gained international acclaim for the contributions made by our students, faculty, staff and especially our alumni, who have gone on to do amazing things in their careers. We celebrate our alumni’s success, and we genuinely appreciate when they retain ties with the College. Today we have two new people on campus who can help you discover the many ways in which you can show your pride and become involved with CIT.

“I want to engage alumni,” begins Gretchen Smathers, “to keep them informed of the latest news and events and how they can remain active in the CIT community.” On one hand, she is deeply involved with alumni; on the other hand, she is absorbed in student activities. “A portion of my job is at the intersection of student and alumni affairs.”

“I plan to show alumni the influence they have when they give back to the College — how their contributions support the students,” she says, pointing out that when alumni volunteer to speak at career fairs, recruit interns, or donate to the annual fund, the students benefit tremendously. “Students in the College of Engineering believe that when they graduate, they will make a difference in the world,” says Smathers. When alumni support these eager and determined students, it helps foster a sense of pride that reverberates throughout the College. She adds, “Alumni should know the good that results from their generosity.”

Gretchen M. Smathers
Associate Director of Alumni Relations and Development
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Ask Thom Brewster what he does at CIT, and he’ll say, “My job is to help secure the future of the College.” This prompts the obvious question: How do you do that? And this is when Brewster opens up, “My job is to facilitate a donor’s desire to leave a legacy. I’m here so that when our alumni think about giving back to the College, they have an ally. That is how I fit into the team at CIT.”

Brewster is excited to be at CIT. “It is a distinct honor and privilege to be associated with one of the top 10 engineering colleges in the country,” he says, noting how the school’s reputation has helped launch its graduates into rewarding careers. He believes that his duty is to help alumni give back to the very institution that has helped them succeed professionally. “Ultimately, our alumni will, in large part, determine the future of this College,” explains Brewster. When alumni contribute their time, talent or financial resources, they are making the College stronger.

Brewster comes to CIT with more than 20 years experience in both higher education and the private sector. Spending much of his career in manufacturing, he came to higher-ed from the glass industry, where he focused on industry developments throughout the Pacific Rim, Australia, and the Middle East.

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