Dear Colleagues,

I arrived at MIT two months ago already enthusiastic about the courses we offer to industry professionals in areas where MIT and its faculty are globally renown. Yet there is much more to come. Through this newsletter, we want to keep you up to date on new learning opportunities that can benefit you and your organization.

We appreciate very much the support of companies who send their key technical professionals to us to gain advanced knowledge from MIT courses and programs designed specifically for working professionals. Through your support, we will have enrolled more than a thousand professionals across all our programs during 2008. We like that—however, our work does not stop there. We want to keep adding new courses and new disciplines to meet the ever-changing needs of the marketplace. To help us meet that goal, I ask that you share your ideas on how MIT could help you advance your enterprise in the future.

For 2009 and beyond, our objective is for MIT Professional Education to grow on all fronts—the number of courses we offer, the number of professionals we enroll, and the number of corporate clients we serve. We will widen our portfolio to include courses in areas such as alternative energy and nanomaterials, to further showcase our strengths, while meeting the needs of the marketplace.

In keeping with the Institute’s global outreach initiative, we will also begin offering courses to professionals outside the U.S. The initial emphasis will be on regional hubs such as Singapore, where we could attract technical professionals from area growth markets and leverage MIT’s existing partnerships, faculty presence, and education delivery infrastructure.

We will continue to leverage existing research and/or other MIT partnerships to help identify new opportunities for multi-year custom course delivery relationships such as the ones we have with British Petroleum (BP) and Accenture.

As we work toward those goals, please stay tuned via our newsletter—with its new design—and this edition’s highlights:

- Japan East Railway’s long MIT Professional Education connection
- Breakthrough solar research offered via PI courses
- How Asian students benefit from MIT Professional Education or MIT experiences

Scientific and technological knowledge changes fast and we are here to help you access and apply the cutting-edge intellectual capital at MIT to your business needs. Please contact us to discuss how MIT can help you meet the demands of the 21st century marketplace.

Thank you.

Bhaskar Pant, Executive Director
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DANIEL NOCERA
SUSTAINABLE SOLAR ENERGY

Professor Daniel Nocera was in the midst of teaching his first Professional Institute (PI) course last summer when the media caught wind of his solar energy breakthrough. Nocera and his lab had overcome a major barrier to large-scale solar power: storing energy for use when the sun doesn’t shine. Nocera and postdoctoral fellow Matthew Kanan have developed a highly effective process for electrolysis of water using inexpensive materials for catalysts.

Students in his weeklong PI course, Renewable Energy: Capturing the Sun, were interested in specifics. “They were really interested in discussing how does a discovery like this move forward in the most efficient way,” says Nocera. “They were as much help to me as I could be to them. There was a lot of expertise in the class.”

Nocera’s class was a mix of professionals from the worlds of science, engineering, investment, business, and policy. He matched their interests by inviting experts from MIT and other universities to deliver guest lectures on topics from solar thermal engineering to biomass to photovoltaics. Similar to his PI course, his lab draws on expertise across diverse fields. With colleagues, he works at the intersections of chemistry and biology, light and energy—from medical enzymology to making exotic magnetic materials through condensed matter physics.

“Our discovery is only one little piece of a full energy system,” Nocera cautions. “The big next step will be to integrate this discovery in a really cheap way into a full energy system.”

Nocera is, however, optimistic that research can usher in an era of sustainable solar energy. “Everything we need to do in solar already exists, but it’s way too expensive to implement. The discovery has to be in new materials and new ways of doing things cheaply. If this country fuels this discovery machine, it can happen in 10 years.”
JR EAST BUILDS A THRIVING RELATIONSHIP

The East Japan Railway Company initiated its relationship with MIT in 1991 with gusto. JR East, as the company is known, endowed a professorial chair and sent their first student to MIT Professional Education Advanced Study Program (ASP) the following spring. The work of that fellow, Makoto Shimamura, led to a substantial joint research project between the Safety Research Lab at JR East and MIT. Each step in the research and education relationship since has led to stronger ties and benefits for both JR East and MIT.

“JR East did not want simply to make a philanthropic gift to a major university, but, rather to take the first step in building a relationship—that was very important to them,” says Joseph Sussman, the JR East Professor in the Department of Civil and Environmental Engineering and the Engineering Systems Division who has made the study and improvement of transportation systems his life’s work. The company has provided support for safety and IT research, hosted faculty seminars in Japan, welcomed MIT students as interns, and enrolled 17 JR East employees as ASP students plus many others in master’s programs at MIT.

“The fellows come with a relatively free agenda,” says Sussman. “I ask the students what the company wants them to study and they say, ‘they want me to do what interests me.’ That’s very progressive.” These students, closely vetted by the company and fully funded, contribute quickly to research groups. When the fellows return to Japan, they bring their new knowledge—whether about transportation issues or organizational change—to a large, complex organization. JR East, which operates 12,671 train runs serving 16 million people daily, is the largest rail company in Japan and one of the biggest in the world.

Yayoi Uchiyama came to MIT as an ASP Fellow to study safety issues in the railway system in Japan. “I focused on the risk of derailment in the Japanese high-speed railway system when an earthquake occurs,” she says. “In fact, some advanced functions were added to the risk analysis program based on my MIT research just after I came back to Japan, and we can calculate highly accurate risks now.”

Uchiyama attributes the success of her research to working closely with MIT faculty with whom she continues to consult via emails, web seminars, and conferences. She also intends to advance her education—after her ASP experience she earned a master’s at MIT with her thesis co-supervised by professors Danielle Veneziano and Sussman—to study for a doctorate in Japan.

ASP Fellow Fuminori Tsunoda, an information technology researcher, studied with Media Lab Professor Hiroshi Ishii, director of the Tangible Media Group. “When I develop IT services, such as the information display in the station, I use the same methodology as the laboratory in MIT,” he says. “I’m collaborating with the MIT professor and continuing the research that I did at MIT. Of course, I’ve been keeping in touch with the ASP Fellows.”

JR East employees with MIT experiences stay connected in terms of work and play. “I went to the MLB opening game of the Red Sox that was held in Tokyo, Japan, last March with some fellow students,” says Uchiyama. “They won and we could really enjoy the game.”

Interested in attending MIT as an ASP Fellow? Apply now for spring term 2009.

Learn more about ASP at the Dec. 2 information session at MIT. Details / RSVP at advancedstudy.mit.edu

“JR East did not want simply to make a philanthropic gift to a major university, but, rather to take the first step in building a relationship—that was very important to them.”

Professor Joseph Sussman
Department of Civil and Environmental Engineering and Engineering Systems Division

East Japan Railway’s Fastech 360, a next-generation bullet train, is designed to run 360 kph.
BENEFITING FROM THE ASIA-MIT EXCHANGE

MIT has a strong relationship with Asia—China, Korea, and India are the top three home countries of international graduate students—and that extends to business and industry through MIT Professional Education. Hitachi Ltd. of Japan has one of the longest MIT Professional Education traditions, sending 48 employees to the Advanced Study Program (ASP) since 1970. Pohang Iron & Steel of Korea has sent 19 employees to ASP since 2000. A steady stream of Professional Institute (PI) enrollments comes from Japan and South Korea. How does this educational relationship benefit the students, their companies, and MIT?

Former PI student Julian Bobe Ph.D. was inspired by U.S. universities and wanted to learn about teaching methods and new technologies. Bobe, who works for the Japanese biopharmaceutical company NanoCarrier, took a weeklong course with Institute Professor Robert Langer. The course, Advances in Controlled Release Technology: Polymeric Delivery Systems for Pharmaceuticals, Proteins, and Other Agents, provided an update on advanced research, including the benefit of learning about competitors’ technologies.

Hyung-Jun Kim, an engineer at the Korean steel manufacturing company POSCO, chose ASP because the flexible curriculum provided access to courses throughout the Institute. What else did MIT offer? “The passion for developing new technology and educating students for their future,” Kim says.

The caliber of MIT faculty attracted Chan-Soo Hwang Ph.D., a researcher at Samsung Electronics in South Korea who took a PI summer course. “I was interested in learning network coding theory,” says Hwang. “I decided to come to MIT because the course was taught by Professor Médard who is one of the most famous in that area. Some Asian universities may have similar programs, however, they do not have comparable professors, and their courses are not as well organized. This course had both theory and practical applications, which is difficult to find in other universities.”

Building education bridges to Asia benefits MIT in many ways, says MIT Professional Education Executive Director Bhaskar Pant: “The frontiers of science and technology are tested more and more often than not outside the U.S. and more often than not in Asia. The speed at which research and applications are being implemented there is breathtaking.”

Faculty can benefit by working with Asian MIT Professional Education students, many of whom are contributing to this rapid change and can continue the educational relationship. “The Asians who come here are leaders in their fields,” Pant says. “These are individuals who can foster research collaborations with MIT and certainly they are potential employers of MIT graduates. These are ambassadors of MIT—and what comes of that can be substantial.”

LEARN MORE ABOUT

BHASKAR PANT, THE NEW EXECUTIVE DIRECTOR

MIT Professional Education Executive Director Bhaskar Pant came to MIT last summer from Princeton-based Educational Testing Service (ETS), where he served in Singapore as managing director of Asia Pacific operations. Pant provided oversight and led strategic growth of ETS’ testing business among academic and corporate clients in China, India, Korea, Japan, and other Asia Pacific countries. Under his direction, ETS piloted an employability testing program for new IT graduates and professionals in several key states in India.

Prior to his work at ETS, Pant served as managing director of Vermont-based World Learning for Business where he was responsible for executive language and cross-cultural training programs for global energy, technology, and life sciences clients such as ExxonMobil, Microsoft, Flextronics, and Sankyo-Daichi Pharmaceuticals. Earlier, Pant ran his own professional development company in India, specializing in people-skills development for technical professionals involved in international work. He served also as the company’s principal consultant and trainer. Before entering the professional education and training arena more than ten years ago, Pant held senior business development and management positions at companies such as Time Warner/Turner Broadcasting, Sony Corporation, and Tektronix in the United States, Europe, and Asia.

Pant received his bachelor’s degree in electrical engineering from the University of Rochester and a master’s degree in broadcast communications from Indiana University in Bloomington.