



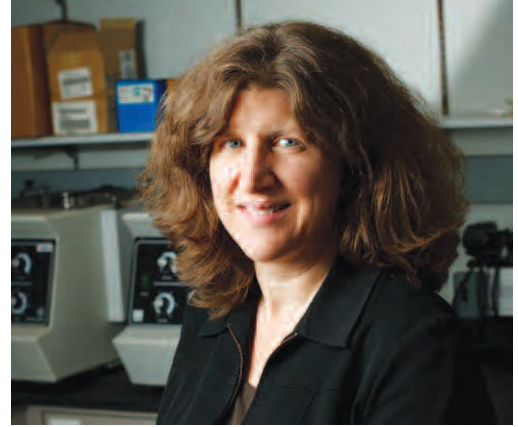
SUPPORTING THE

ENVIRON

M E N T

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A cleaner, safer environment has been high among NJIT's educational and research priorities for decades. In the '80s and '90s, the university partnered with industry in one of the nation's leading research efforts in hazardous waste management and remediation of toxic sites. Today the emphasis has expanded to include sustainability and efforts to protect natural resources and preserve them for the future.



Lisa Axe, professor of civil and environmental engineering, is working with NJIT researchers and industry to develop a National Science Foundation industry/University Cooperative Research Center on Water Environmental Technologies (WET) at NJIT. As part of the effort, a Water Research

Forum was held this spring with participation by scientists from the federal and state agencies along with industry and academic communities. Discussions focused on unresolved issues, research activities, and the technology needed to detect, monitor, and develop a better understanding of emerging contaminants in the environment. The growing evidence of low levels of unregulated chemicals, including components of personal care and pharmaceutical products as well as manufactured nano-materials in surface and ground waters and subsequently in drinking water, has increased awareness of the situation.

Maurie J. Cohen, associate professor of chemistry and environmental science, researches sustainable consumption, alternative mobility futures, sociotechnical transition management, the social dimensions of industrial ecology, and the politics of the environment. He is editor of the newly-created e-journal, *Sustainability: Science, Practice and Policy*, published by the United States Geological Survey and Proquest.

Associate Professor of Architecture **Richard Garber** and student **Brian Novello** designed a proposal for a network of modular floating docks to harness clean energy for

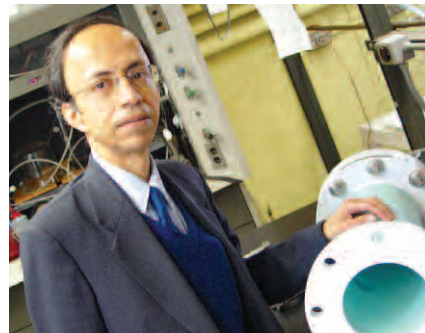


New York City. Created for the 2009 *Metropolis Magazine* Next Generation Design Competition, the project was developed at Garber's firm, GRO Architects, with input from **Nicole Robertson** and **Justin Foster '08** and featured in a recent issue of the magazine. The proposal calls for docking stations that would plug into conventional piers in New York City with vertical turbines fastened to their underside to harness river currents to generate clean energy while increasing public green space and tidal pools for wildlife. The stations would alleviate the need for conventional power to light city streets.

Gareth Russell, assistant professor of biological sciences, heads the quantitative ecology and conservation biology lab, which focuses on community ecology, conservation biology and computational applications in both of these areas. With a grant from the National Science Foundation, his team is constructing an integrated camera-computer system to monitor coral reef fish. Coral reefs and the complex communities they support are in decline worldwide so they need to be monitored for signs of collapse. The new

instrumentation will provide an "early warning system" for disruptions to the reef community.

Kamalesh K. Sirkar, distinguished professor



of chemical engineering and director of the Center for Membrane Technologies, is an internationally recognized expert in membrane separation technologies used for water desalination, protein purification, removing carbon dioxide and other gases from air, and the removal of toxins from water. He is currently working with NSF funding to bring NJIT into the Industry/University Cooperative Research Center for Membrane Applied Science and Technology (MAST) at the University of Colorado.

Zeyuan Qiu (above center), associate professor of chemistry and environmental science, studies the close land-water connections. He evaluates the technical, social, economic and institutional factors that affect protection and preservation of hydrologically sensitive areas in landscapes and their policy implications for watershed management, storm-water management and smart growth in environmentally fragile rural-urban interfaces. With grant support from the U.S. Environmental Protection Agency – National Center for Environmental Research, his current project in the Rockaway Creek Watershed is designed to protect/preserve critical source areas at the municipal level to achieve the long-term sustainability of water resources through community-based land use planning and ordinances. Goals are to identify the critical source areas for protection; to review the existing municipal land use plan, zoning and ordinances; and to develop land use plans, ordinances and BMPs that are adoptable by municipalities to protect the critical source areas in local communities; and to design and implement a set of education and outreach programs.



Neil M. Maher, associate professor and



chair of history, specialized in 20th-century environmental, social, and political history. He recently published *Nature's New Deal: The Civilian Conservation Corps and the Roots of the American Environmental Movement* (Oxford University Press, 2008) and is currently researching and writing an environmental history of the space race during the 1960s and 1970s.

Daniel E. Bunker, assistant professor of biological sciences, researches how global changes in factors such as climate, land use and invasive species affect ecological



communities. He is a co-editor of *Biodiversity, Ecosystem Functioning, and Human Well-being: An Ecological and Economic Perspective* (Oxford University Press, 2009), which summarizes recent advances in biodiversity-ecosystem functioning research and explores the economics of biodiversity and ecosystem services.

Environmentally-sound projects are a major focus among the start-up businesses in **NJIT's Enterprise Development Center**, including:

- **BioNeutral Group, Inc.**, is a chemical technology-based life science company that has developed a technology that can neutralize harmful environmental contaminants, toxins and dangerous micro-organisms including bacteria, viruses, mold, fungi and spores. Ygiene™ and Ogiene™ are eco-friendly and include natural and common ingredients that are found in baby products and in everyday foods. BioNeutral's proprietary platform technology has been proven effective in surface, water and airborne applications.
- **Applechem Inc.** worked with the U.S. Department of Agriculture to develop a patent-pending technology to convert vegetable oils with advanced polymers into Nature Vgel™, a unique material that can replace petroleum-based materials in personal care and cleansing products. Applechem received a Small Business Innovation Research grant from the New Jersey Commission on Science and Technology to create a range of prototypes to market to the cosmetic and toiletry industry.
- **Lenterra Inc.** received a phase II Small Business Innovation Research grant from the U.S. Department of Energy to continue development of new technology to identify and measure the fluxes or concentrations of green house gases such as carbon dioxide, methane, and nitrous oxide. Lenterra partners with **Somenath Mitra**, professor of chemistry and environmental science, whose patented Microtrap concentrates trace-level gases to facilitate detection.

How Green is My Campus



A Green@NJIT web portal was the outcome of a class project assigned last semester by Professor of Humanities **Nancy Coppola** to a distance-learning section of her technical writing course. Coppola and her students worked with university administration and Web Services to get approval and develop an outline, and then the students researched, wrote and edited all the content. The completed site can be seen at www.njit.edu/green. Among the interesting facts students uncovered:

- NJIT's Campus Center uses solar panels with PV cells that convert sunlight to electricity. Since the solar panels were installed, NJIT has saved enough energy to power 510 homes a day, as well as accumulating enough energy to make 500,000 cups of coffee. Solar panels are also helping to reduce waste in the air. NJIT so far has prevented 68 pounds of nitrogen oxides and over 200,000 pounds of carbon dioxide from going off into the air.
- NJIT competed in RecycleMania for the second time this year and increased university recycling by over 19,000 pounds during the 10 week national competition. In addition, NJIT placed in the top 22 percent of schools for bottle and can recycling.
- The Campus Center received a grant from the National Recycling Council and Coca Cola for 50 recycling containers for bottles/cans that were placed in classrooms in Kupfrian and Tiernan Halls in July 2008. Over 1,100 applications were submitted and only 75 were awarded, of which only two were universities.
- The Campus Center and Residence Life received a grant from the New Jersey Higher Education Partnership for Sustainability (NJHEPS) for their "Do It In the Dark" residence hall energy reduction contest in Spring 2009. In addition, the program was supported by Siemens and PSE&G. The winning residence hall, Cypress, was able to reduce their energy use by 11% over a four-week period.