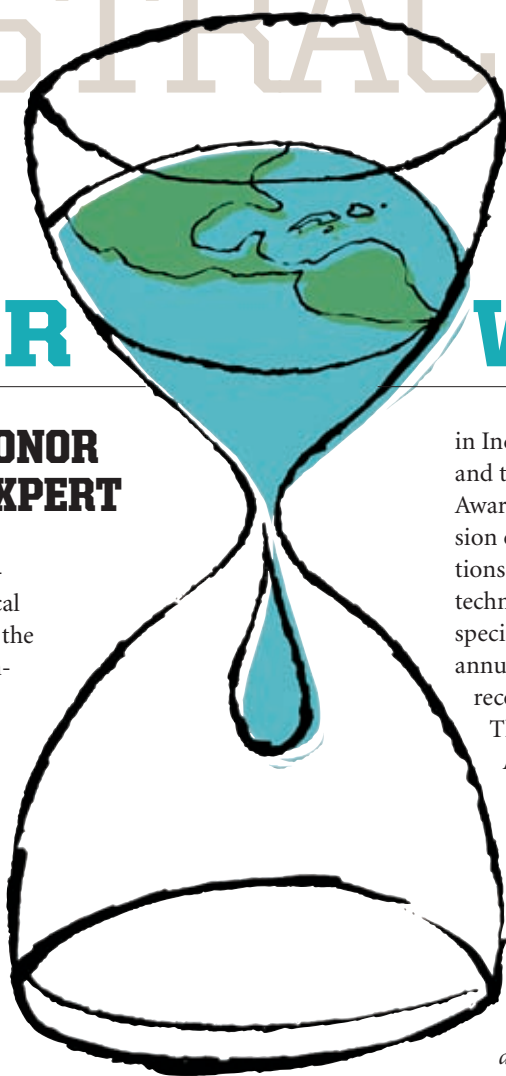


ABSTRACTS

WATER WORKS



OVERSEERS HONOR MEMBRANE EXPERT

Kamalesh K. Sirkar – distinguished professor of chemical engineering and director of the university’s Center for Membrane Technologies – was awarded the second annual NJIT Board of Overseers Excellence in Research Prize and Medal at a ceremony this fall.

A member of NJIT’s faculty since 1992, Sirkar is an internationally recognized expert in membrane-separation processes used throughout the world by the chemical, food, petrochemical and pharmaceutical industries to separate, purify or concentrate liquid solutions, cellular suspensions or gaseous mixtures. They are also increasingly important in meeting the growing global need for pure drinking water, an application that has been a major focus of Sirkar’s recent research.

Sirkar, who holds 25 U.S. patents, is the inventor of the commercialized membrane-based solvent extraction technology for which the Hoechst Celanese company received Honorable Mention when the Kirkpatrick Awards for Chemical Engineering Achievement were announced in 1991.

Sirkar’s numerous honors and awards include recognition from the American Institute of

Chemical Engineers (AIChE) accorded to few in his field. He is the recipient of the 2005 AIChE Institute Award for Excellence

in Industrial Gases Technology and the 2008 Clarence Gerhold Award of the Separations Division of AIChE. His contributions to membrane science and technology were honored at two special sessions of the AIChE’s annual meeting in 2008. He was recognized in 2006 with the Thomas Alva Edison Patent Award in the Environmental Category of the Research and Development Council of New Jersey. In 2008, he was named a Fellow of the American Association for the Advancement of Science. ■

For more information about Sirkar’s research, see the winter 2007 NJIT Magazine article “Quenching the World’s Thirst: Working To Meet a Global Challenge” online at <http://magazine.njit.edu>.

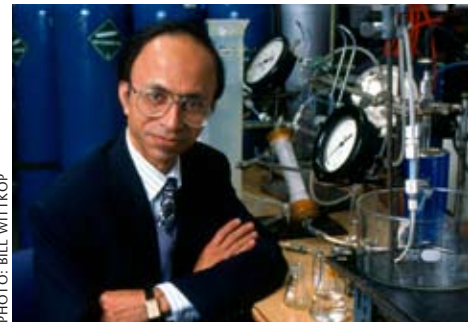


PHOTO: BILL WITTKOP

Membrane-separation processes are increasingly important in meeting the growing global need for pure drinking water.

NJIT Board of Overseers Excellence in Research Prize and Medal: www.njit.edu/about/boards/overseers/awards/prize-medal

SAFER WATER FOR HAITI

More than a dozen NJIT civil and mechanical engineering students, faculty, and staff volunteers have spent time over the past three years in Haiti helping residents of the town of Milot to remove bacteria from their drinking water and halt water-borne diseases. Working under the auspices of Engineers Without Borders (EWB), the NJIT group has already made four visits to the country.

“The idea is to make the people self-sufficient,” says Paul Rodriguez, president of the EWB chapter at NJIT. “When we finish this project, 25 bio-sand filters will have been installed in 21 homes, two churches and two schools. We will have set up a filter production center and worked side-by-side with Haitian students now capable of building and installing more units.” Some 30,000 people live in the town and ideally there will be 3,500 filtration units. ■



PHOTO: NJIT ENGINEERS WITHOUT BORDERS

NJIT Engineers Without Borders members Paul Rodriguez (far right), Bryce Anzelmo (left, in blue shirt) and Kate Boardman (kneeling) help Haitian students prepare sand for water purification filters.

There's much more on the Web – visit *NJIT Magazine* online at <http://magazine.njit.edu> for links to more information about topics in this issue.

SPACE WEATHER WATCH AT THE SOUTH POLE

NJIT's Louis Lanzerotti, distinguished professor of physics, is part of an international scientific team that has created a network of automatic, autonomous observatories in Antarctica which for the first time gather critical year-round "space weather" data in the harshest environment on

The remote observatories range in size and complexity from platforms with an array of instruments powered by the sun and wind that transmit real-time data to much smaller units that collect and store data for retrieval. The observatories are helping to construct a comprehensive picture of the interaction between solar-wind energy and the Earth's magnetic-field lines, which converge at both the North and South Poles.



PHOTO: COURTESY OF NASA

Antarctic Aurora Australis, or southern lights, from space

Earth. The project, involving universities across the U.S. as well as in other countries, is known as the Polar Experiment Network for Geospace Upper-atmosphere Investigations (PENGUIn). Information from these observatories was recently used in conjunction with that from NASA satellites to provide new data about magnetospheric substorms – the sudden bursts of energy responsible for auroral displays.

NASA has twice recognized Lanzerotti's contributions to science with the agency's Distinguished Scientific Achievement Medal and he has also received the NASA Distinguished Public Service Medal. Minor Planet 5504 Lanzerotti is named in recognition of his space and planetary research, and Mount Lanzerotti (74.83° S, 70.55° W) recognizes his geophysical research in the Antarctic. ■

CORRECTION: The digital art "Reconstructing Monet" on page 8 of the spring 2009 issue was incorrectly attributed; it was created by School of Art + Design student Mina Liba.

"The Brick," a sculpture iconic of the wireless revolution's early days, is now on permanent display at NJIT.

A PHONE IN STONE

"The Brick," a sculpture iconic of the wireless revolution's early days, is now on permanent display at NJIT in the lobby of Fenster Hall. The five-foot tall creation is the work of Daniel A. Henderson – electronics innovator, entrepreneur, philanthropist and member of NJIT's Albert Dorman Honors College Board of Visitors. Sculpted in black Champlain marble and anodized aluminum, Henderson's work was inspired by the world's first portable cellular telephone.

Henderson, who invented wireless picture and video messaging in 1993, serves as a board member of the Digital Stone Project in Mercerville, New Jersey, which fabricated the sculpture. "The point of this work is very appropriate to NJIT," he said at the sculpture's unveiling in July. "We have long been proud of our research in cell telephony and related technologies at this university."

See Daniel A. Henderson's essay "Living in the Wireless Neighborhood" in the fall 2003 NJIT Magazine at <http://magazine.njit.edu> ■



PHOTO: SUGATA BANERJI

CASE FUNDRAISING AWARD FOR NJIT

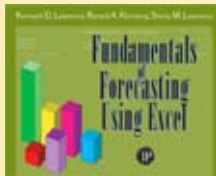
The Council for Advancement and Support of Education (CASE) has named NJIT a winner of the 2009 WealthEngine Award for Educational Fundraising. The competition recognizes superior fundraising programs across the country and is a component of the CASE Circle of Excellence program, which honors exemplary advancement initiatives.

The university received an Overall Improvement Award based on the judges' analysis of three years of fundraising data submitted to the council's annual survey. "This is a result of a total university advancement effort and the significant support and involvement of President Robert A. Altenkirch and the academic deans," said NJIT Vice President for Advancement Charles R. Dees, Jr. ■

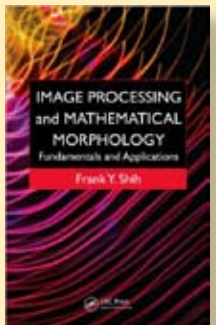
BOOK SHELF



Daniel E. Bunker, assistant professor in the Department of Biological Sciences, is a co-editor of *Biodiversity, Ecosystem Functioning and Human Wellbeing: An Ecological and Economic Perspective* (Oxford University Press, 2009). The graduate-level text incorporates the latest developments in the field of biodiversity and ecosystem functioning, one of the most controversial and high-profile areas of ecological research.



Fundamentals of Forecasting Using Excel (Industrial Press, 2009), co-authored by management professor **Kenneth D. Lawrence**, offers a comprehensive overview of data analysis and the development of forecasting models, with emphasis on the practical applications of forecasting integral to the success of almost every commercial enterprise.



Frank Y. Shih, professor of computer science, has published *Image Processing and Mathematical Morphology, Fundamentals and Applications* (Taylor & Francis Group, CRC Press, 2009). Shih's book is a wide-ranging survey of morphological mechanisms and techniques of major practical significance in areas ranging from automated vision detection and inspection to object recognition, image analysis and pattern recognition. ■

"Using our program, we can usually inspect a photograph on a computer screen and know that someone has changed it."

Yun-Qing Shi, Professor of Electrical and Computer Engineering



PHOTO: KAI CHAN

Yun-Qing Shi with student Haifeng Xiao



DETECTING DIGITAL TAMPERING

Electrical and Computer Engineering Professor Yun-Qing Shi has cracked the code that will make it much easier to detect

tampering with electronic images. "Using our program, we can usually inspect a photograph on a computer screen and know that someone has changed it," says Shi.

Earlier this year, "System and Method of Steganalysis," developed by Shi and his collaborator Guorong Xuan received a U.S. patent. Since 2003, Shi has been granted four other patents in this area and awaits news of more than two dozen pending patents. Steganalysis is a method of determining whether data has been hidden in a digital medium.

An expert in digital data forensics, Shi lectures worldwide on new and better ways to detect tampering with electronic images. "In our digital age," he says, "images can be massively produced, easily manipulated, and swiftly transmitted anywhere in the world. Information assurance has thus become an urgent and critical issue." ■

A WINNING BUSINESS

Three outstanding students in NJIT's undergraduate business program placed third overall in the 2009 East Coast Venture Challenge (ECVC) hosted at Columbia University. Student entrepreneurs from top universities across the East Coast pitched their ideas to a panel of venture capital judges from DFJ Gotham Ventures and Draper Fisher Jurvetson, early-stage venture capital firms based in New York City.

The student team of Quaison Carter, Louis Noto and Paulius Skema finished ahead of teams

from Yale, Columbia and Johns Hopkins, among others, for their presentation of the company fetchFIRE, founded by Carter. fetchFIRE is an online repository of emergency information that families and others can use to stay in touch when the need arises.

Subscribers can post information at www.fetchFIRE.com and make it accessible to authorized individuals via a secure user name and password. In an emergency, this vital information can be retrieved either online or via a toll free phone number. The information includes personal itineraries, emergency contacts and procedures, and important medical data such as current medications. ■



PHOTO: KAI CHAN

Quaison Carter also received NJIT's Peter Small Memorial Scholarship for graduate study.



FOURTH STRAIGHT STEEL BRIDGE WIN

For the fourth consecutive year, NJIT's Steel Bridge Team proved their engineering prowess at the 2009 Metropolitan Region Steel Bridge Competition, held at Polytechnic University in Brooklyn. Contenders in this year's contest included Columbia, Cooper Union, Montreal Technical College, New York City College of Technology, College of New Jersey, Rutgers and Stevens.

The annual competition is sponsored by the American Institute of Steel Construction (AISC) in conjunction with the American Society of Civil Engineers (ASCE) to foster educational excellence among the nation's civil engineering programs. The contest requires student teams to plan, design, fabricate and erect a bridge of approximately 1/10 scale based upon a general set of material specifications and geometric requirements. Teams also have to erect their bridges during timed competition. This year's bridge had to span 20 feet and carry a load of 2,500 lbs.

Important aspects of the 2009 NJIT design were an innovative quick-connecting pin joint to speed construction and a lightweight 3-D space truss configuration to reduce weight. This year the NJIT team worked with two New Jersey corporate partners to fabricate their bridge: Acrow Bridges of Parsippany and Schiavone Constructors and Engineers of Secaucus. Both companies provided financial and in-kind support for the students' effort. ■

END NOTES

Gregory Kriegsmann, foundation chair of mathematical sciences, and **Robert M. Miura**, distinguished professor, are among the first Fellows of the Society for Industrial and Applied Mathematics. According to the society, the initial group of Fellows was chosen from among members especially distinguished by their past awards and professional accomplishments.

Philip R. Goode, distinguished professor of physics, has been inducted into the New Jersey High-Tech Hall of Fame. The Hall of Fame was established in 1999 to recognize outstanding individuals working in New Jersey for their scientific and technological achievements as educators, researchers, business leaders and government officials. Goode, also director of NJIT's Big Bear Solar Observatory, received recent additional funding from NASA and Stanford University to continue work on new imaging instrumentation at the observatory.

Two other NJIT faculty have received funding from the National Science Foundation for investigating

deep space phenomena. **Ju Jing**, assistant research professor, Center for Solar-Terrestrial Research (CSTR), has been awarded \$150,000 for monitoring and forecasting space weather. **Wenda Cao**, an assistant professor also working at the CSTR, is the recipient of a CAREER award of nearly \$100,000 for development of high-resolution infrared instrumentation to explore solar activity.

The Society for Technical Communication has named **Nancy W. Coppola**, director of the MS program in professional and technical communication, an Associate Fellow – one of the highest ranks that the society confers upon members.

Richard B. Sher, former Guggenheim Fellow and distinguished professor of history, received a National Endowment for the Humanities Fellowship to edit correspondence of James Boswell, the 18th-century biographer of Samuel Johnson, for the Research Series of the Yale Boswell Editions. Sher was also recently elected a Corresponding Fellow of the Royal Society of Edinburgh.

ALTENKIRCH CHAIRS HISPANIC SCHOLARSHIP AND AWARDS BANQUET

NJIT President Robert A. Altenkirch served as honorary chair of the ninth annual scholarship and awards banquet sponsored by the Hispanic American Chamber of Commerce

Foundation of Essex County. Dr. Niathan Allen of Summit Developers was master of ceremonies for this year's event, held at the NJIT Campus Center.

A highlight of the evening was Allen's presentation of a Lifetime Achievement Award to Robert P. Marasco for more than 25 years of public service with the City of Newark, which includes staff management and supervision of elections. In addition to providing scholarship support

for outstanding young men and women, the foundation recognizes business, governmental, corporate and individual achievements that positively impact the Hispanic/Latino community. ■



President Altenkirch (left), Dr. Niathan Allen and Robert P. Marasco

The game for children is intended to improve neuroplasticity through intensive and repetitive training.



GIVING VIDEO THERAPY A HELPING HAND

The NEC Foundation of America is helping NJIT promote child's play with a very serious goal – a video game designed at the university as therapy for children with severe sensory and motor disabilities. A new grant from the foundation will support the dissemination and use of a game titled *Hands-Up*, created by NJIT's Rehabilitation Engineering Research Center on Technology for Children with Orthopedic Disabilities.

The NJIT rehabilitation center developed a prototype of the *Hands-Up* game software with support from the U.S. Department of Education's National Institute on Disability and Rehabilitation Research. The game is intended to improve neuroplasticity through intensive and repetitive training.

Biomedical Engineering Professor and Center Director Richard Foulds expects more than 50 project partners to receive and test the free software. Ongoing technical assistance will also be available to participants. ■

POINT BY POINT

The latest news about NJIT sports:
www.njithighlanders.com

DIVISION 1 ALL THE WAY

NJIT athletics has officially gained across-the-board active membership in NCAA Division I, beginning September 1, 2009. As a result of the latest action by the NCAA's Division I Leadership Council, NJIT will enjoy the full benefits of Division I membership. These include eligibility for Division I postseason championship competition and the potential inclusion of Highlanders among the national Division I leaders in statistics maintained by the NCAA.

In the previous three seasons, as part of the NCAA's formal reclassification process, NJIT's teams faced Division I competition but were not eligible for postseason championships or for inclusion in the national statistical rankings. The NCAA's decision that NJIT is a full member of Division I completes a specific timetable that required NJIT and the Department of Athletics to meet a series of annual benchmark standards before proceeding to the next year in the process.

Upon receiving word of NJIT's new Division I status, Director of Athletics Lenny Kaplan said: "We've worked hard toward this goal and it is a big step for the program. We are looking forward to being a solid and successful member of Division I and we are excited by the opportunity to write a new chapter in the history of NJIT athletics." ■

CELEBRATING THE SPIRIT OF NJIT ATHLETICS

Two alumni and a distinguished former coach were honored as new members of the NJIT Athletics Hall of Fame at the

spring 2009 induction dinner that also recognized Professor Roy H. Cornely for his support of the university's athletics program and celebrated victory in the Highlanders Athletics Campaign. The two alumni are Roland E. Barth '60, soccer and fencing, and Jean M. Graziano



Roland E. Barth (left), Jean M. Graziano, Dave DeNure and Roy H. Cornely

PHOTO: LARRY LEVANTI

'89, softball. Inductee Dave DeNure coached men's volleyball (1989-98), women's volleyball (1983-91) and women's basketball (1987-88).

Cornely, a member of the Department of Electrical and Computer Engineering, received the Robert Swanson Award for his service from 1993 to 2008 as faculty athletics representative and his tireless personal support of NJIT's teams and individual student-athletes.

Those present also celebrated the success of the Highlanders Athletics Campaign, the first major fundraising effort for intercollegiate athletics at NJIT, in exceeding its goal of \$5 million. Seymour "Zoom" Fleisher '51 commended the campaign's many contributors and spoke about what their support means for NJIT. Fleisher succeeded his late friend and teammate, Herb Iris '51, as national chair of the campaign. ■

DIVISION I ON THE DIAMOND

Kyle McCarthy, Steven Ace, and James D'Aloia have made the NCAA Division I Independent Baseball All-Academic Team for 2009. McCarthy, a first-baseman, is a mathematical sciences major. He appeared in 25 games (17 starts) leading the team in putouts with 150. At the plate, he batted .250 with 14 hits and eight RBIs. Industrial engineering major Ace is a right-handed pitcher. D'Aloia, a mechanical engineering major and one of NJIT's best defensive outfielders, appeared in 31 games, starting 25.



PHOTO: LARRY LEVANTI

Kyle McCarthy

Three NJIT students made the NCAA Division I Independent Baseball All-Academic Team for 2009.

McCarthy and Ace are also enrolled in Albert Dorman Honors College.

To be eligible for this NCAA honor, the students nominated by participating schools had to have a minimum cumulative GPA of at least 3.30, be at least a sophomore in academic standing, and have played as a starter or key reserve.

Sophomores Jeffrey Pizzi, an outfielder, and shortstop Vincent Del Vecchio were selected by the New Jersey Collegiate Baseball Association for the 2009 Division I All-State Rookie Team. Members were chosen by voting among the coaches of the eight New Jersey Division I teams. Pizzi had the top batting average for the Highlanders among players with more than 80 at-bats, finishing at .284. Del Vecchio was the only player to start every game

FIVE STAND OUT IN THE WATER

Five Highlanders – Pablo Botero, Andrew Helbers, Michael Lawson, James Paccioretti (Albert Dorman Honors College) and Karen Cilentio – were named to the Metropolitan Swimming and Diving Conference All-Academic Team for the 2008-2009 season.

To secure a place on the All-Academic Team, an athlete must finish in the top 16 places in at least one event at the Metropolitan Swimming and Diving Championship Meet, which they may do in either an individual event or as part of a relay team. Additionally, they must have either a cumulative GPA or a fall semester term GPA of 3.5 or above. ■



James Paccioretti

(37). Among players with at least 80 at-bats, he ranked second in batting average at .263 and total hits (30). He helped NJIT set a new school season mark for double plays (34) to top the old mark (30), set in 2007, and his 106 assists in a season are second all-time at NJIT. ■