Recognizing a life of INNOVATION

UB’s Eli Ruckenstein receives the 2004 Founders Award from the National Academy of Engineering
The Founders Award honors outstanding NAE members who, the academy says, are “the elite of the NAE”—individuals who have proven their worth throughout the years not only to the engineering community, but also through their dedication to the organization. Specifically, Ruckenstein was honored for leadership in modernizing research and development in key areas of chemical engineering.

“The NAE’s decision to name Professor Ruckenstein the 2004 recipient of its Founders Award, which can only be awarded to those who have been elected to this distinguished organization, is fitting testimony to a scholarly career characterized by the achievement of numerous, critical ‘firsts’ spurred by Professor Ruckenstein’s ability to solve intractable research problems by approaching them in fundamentally...
novel ways,” said Mark Kanwan, PhD, dean of the UB School of Engineering and Applied Sciences. Ruckenstein’s election to the NAE in 1990 was the first for a SUNY professor. This prestigious award is yet another first for UB and SUNY.

Ruckenstein, a faculty member in the UB Department of Chemical and Biological Engineering since 1973, is widely recognized as one of the world’s most influential chemical engineers. He is the first UB professor to receive the coveted National Medal of Science, an award bestowed on individuals who have made outstanding contributions to knowledge in the chemical, physical, biological, mathematical, engineering, or social sciences.

Ruckenstein conducts both theoretical and experimental research that not only has changed scientists’ understanding of the fundamental phenomena of chemical processes, but has led to the development of enhanced research methods and new materials. He has published more than 800 papers.

Distinguished engineers who wrote supporting materials for his nomination to receive the Founders Award repeatedly mention the unprecedented breadth of his work. “There is virtually no aspect of modern chemical engineering that has not been profoundly influenced by Eli Ruckenstein,” wrote one. Another noted that while most scientists of distinction contribute in one or two areas, Ruckenstein can “innovate in a seemingly boundless scientific arena,” while another noted that achievements in any one of the many areas Ruckenstein has impacted “would constitute a brilliant career. Together, they are nothing short of monumental."

Ruckenstein has made groundbreaking contributions in areas including transport phenomena, the stability of nanosized liquid and solid films, and thermodynamics of complex systems. He pioneered the theoretical and experimental treatment of the stability of supported metal catalysts, and developed the first kinetic theory of nucleation, theories for colloidal forces, and theories in molecular thermodynamics. He also invented new synthetic methods for preparing polymeric membranes and polymeric catalytic particles.

Ten patents have been issued based on his research. One of them, which covers new materials he developed with interesting thermal and rheological properties, was licensed by IBM and is now used in the company’s computers. Recently, he has developed techniques for the preparation of chitosan and chitin membranes with controlled and reproducible porosity that can be used for protein separation and for the adsorption of cancer cells.

Ruckenstein previously was a professor at Polytechnic Institute in Bucharest, the University of Delaware, and Clarkson University. He has held visiting professorships at the Catholic University in Leuven, Belgium; Technion in Haifa, Israel; Bayreuth University in West Germany; and Carnegie Mellon University.

Ruckenstein has been honored by the American Institute of Chemical Engineers with its most prestigious awards: the Founders Award in 2002 for outstanding contributions to the field of chemical engineering; the Alpha Chi Sigma Award in 1977 for excellence in chemical engineering research; and
A year of departmental distinction

In the 2003-04 academic year, members of the UB Department of Chemical and Biological Engineering received an impressive array of awards and professional honors. Together, our faculty of fourteen authored 73 peer-reviewed journal articles and received four patents. In the same period, 23 new grants were received, with 30 others continuing, and 62 students—40 BS, 5 MS, 7 MEng, and 10 PhD—graduated from our department. Below, find an overview of individual achievements.

Paschalis Alexandridis, PhD, professor
Editorial-board membership, the Journal of Biomedical Nanotechnology and the Journal of Science and Technology.
Eminent Engineer award, from New York Nu Chapter, Tau Beta Pi.

Stelios T. Andreadis, PhD, associate professor
Exceptional Scholar Young Investigator Award, from the University at Buffalo.
Outstanding Scientific Poster award, for a poster entitled, “Rate-limiting Steps in Retrovirus Synthesis and Assembly,” presented with P. Lei at the November 2003 annual meeting of the American Institute of Chemical Engineers in San Francisco, California.

Jeffrey R. Errington, PhD, assistant professor
James D. Watson Investigator Award, presented in recognition of outstanding scientists and engineers who, early in their careers, show potential for leadership and scientific discovery in the field of biotechnology. Presented by the New York State Office of Science, Technology and Academic Research, the award carries a $200,000 grant, which will support Dr. Errington’s research on methods to preserve biomaterials.

David A. Kofke, PhD, UB Distinguished Professor
John M. Prausnitz Award in Applied Chemical Thermodynamics, for significant and lasting contributions to the field of applied chemical thermodynamics. Awarded by the organizing committee of the triennial International Conference on Properties and Phase Equilibria for Product and Process Design.

Sriram Neelamegham, PhD, associate professor
Independent Scientist Award, from the National Institute of Heart, Lung, and Blood.

Mark T. Swihart, PhD, associate professor
J.B. Wagner Young Investigator Award, an international award presented to one scientist every two years by the High Temperature Materials Division of the Electrochemical Society.

SUNY Chancellor’s Award for Excellence in Research and Creative Activity, from the State University of New York.

Triantafillos J. Mountziaris, PhD, professor
Following a nationwide competition, Mountziaris was selected to serve as Program Director of the Particulate and Multiphase Processes Program at the National Science Foundation, Arlington, Virginia, August 2003–August 2005.

Ruckenstein received bachelor and doctoral degrees in engineering from Polytechnic Institute in Bucharest.

He and his wife, Velina, who is a chemist, reside in Amherst, New York.
New name, new directions

Reflecting the interdisciplinary nature of the department and its faculty, in 2004 UB’s Department of Chemical Engineering was renamed the Department of Chemical and Biological Engineering. According to Carl Lund, PhD, professor and chair of the department, the name change "will foster even greater interdisciplinary interactions between engineering, medicine, the health sciences, chemical sciences, and biological sciences."

For more information about departmental events and achievements, contact Carl Lund, PhD, professor and chair, at (716) 645-2911, extension 2211, or lund@eng.buffalo.edu.