



ZIMMERMAN



ANASTAS



TOWNSEND

GREEN ENGINEER AND CHEMIST TO JOIN YALE FACULTY

An author of a treatise on the principles of green engineering and the father of green chemistry will join the full-time Yale faculty in January.

With the appointments of **Julie Zimmerman** of the U.S. Environmental Protection Agency (EPA), and **Paul Anastas** of the American Chemical Society, “Yale builds on its already world-class stature in industrial ecology and sustainability,” said Thomas Graedel, the Clifton R. Musser Professor of Industrial Ecology at the Yale School of Forestry & Environmental Studies (F&ES).

Zimmerman will hold a joint faculty appointment in Environmental Engineering and F&ES, and is supported in part by the Yale Institute for Biospheric Studies. Anastas will be professor in the Practice of Green Chemistry at F&ES, as well as have appointments in the Department of Chemistry and in Environmental Engineering.

Zimmerman, who obtained a Ph.D. from the University of Michigan in 2003, developed novel, environmentally friendly metalworking solvents for optimizing manufacturing machining processes without sacrificing performance. Her results are currently being implemented by the auto industry.

After getting her Ph.D., Zimmerman obtained her current position with the Office of Research and Development at the EPA. Chief among her responsibilities is managing grants to academia and small businesses in the areas of pollution prevention and sustainability. She is also managing several projects that will

integrate sustainability concepts into engineering education. She authored a widely known and highly regarded article, “Sustainable Development Through the Principles of Green Engineering,” which was published in *Environmental Science & Technology* in 2003. She is also a part-time faculty member at the University of Virginia, teaching these principles to engineers in training.

Anastas’s name is synonymous with green chemistry throughout much of the world. He is currently director of the Green Chemistry Institute, which is headquartered at the American Chemical Society in Washington, D.C., and has established 24 green chemistry chapters in countries including China, Ethiopia, India, Japan and South Africa. He recently was named the “father of green chemistry” and the 2006 winner of the \$250,000 Heinz Prize for the Environment by the Heinz Family Philanthropies.

Anastas originated the field of green chemistry at the EPA in the 1990s, and has published widely on topics of science through sustainability, including the books *Benign by Design: Alternative Synthetic Design for Pollution Prevention* (1994); *Designing Safer Polymers* (2000); *Green Engineering: Environmentally Conscious Design of Chemical Processes* (2002); and his seminal work, with co-author John Warner, *Green Chemistry: Theory and Practice* (2000).

He was assistant director for the environment in the White House Office of Science and Technology Policy from 1999 to 2004. Prior to joining that office, he was the chief of the Industrial Chemistry Branch of the EPA, where he was responsible for the regulatory

review of industrial chemicals under the Toxic Substances Control Act and the development of rules, policy and guidance. He holds a Ph.D. in organic chemistry from Brandeis University.

JEFFREY TOWNSEND APPOINTED TO THE DEPARTMENT OF ECOLOGY & EVOLUTIONARY BIOLOGY

Jeffrey Townsend, a 2005 winner of the American Society of Naturalists’ Young Investigators Award, has been appointed Assistant Professor in the Department of Ecology & Evolutionary Biology at Yale University as of July 1, 2006. Townsend’s research is on how genes have evolved to modulate development in their environment to create the diverse organisms that populate the earth today. His work includes extensive use of computational, mathematical and experimental techniques.

Primarily, Townsend’s lab works on fungi, including the wine and bread yeast *Saccharomyces cerevisiae* and the “bread mold” *Neurospora crassa*, which he has collected from natural populations. His American Society of Naturalists’ Young Investigators’ Award was awarded to him for his work “revealing population genetic variation in genome-wide gene expression in *S. cerevisiae*,” work that revealed, for the first time, the extent of natural variation in the degree to which genes are expressed for every gene in an organism’s genome. Using microarrays with entire genomes printed on them, he has since gone on to apply such whole genome experimentation to other fungi, including *Neurospora crassa*, which is found on decomposing plants after wildfires, and *Coccidioides posadasii*, a soil fungus which can occasionally infect mammals to cause San

Joaquin Valley Fever. By understanding how diverse fungi integrate genome-wide gene expression to control their development and metabolism, Townsend plans to relate molecular and organismal biology with a new degree of holistic precision.

To perform such experiments, Townsend has worked extensively on the development of mathematical models and statistical approaches for experimental design, creating, for instance, a popular Bayesian approach for the analysis of DNA microarray data. Some of Townsend's most recent work has been on phylogenetic theory—which provides the fundamental basis for classification of the diversity of life. He has developed mathematical theory to help explain the population genetics of microbes that exchange DNA with distantly related organisms. His most recent theoretical work has been to develop mathematical and computational tools that will increase the efficiency of phylogenetic experimental designs. Researchers are increasingly using DNA sequencing of genes to characterize the relationships among organisms, elucidating which species are closely related to other species, and which taxonomic groups have shared evolutionary history. His theoretical advances are helping to quantify the informativeness of genes that researches sequence, resulting in experiments that are quicker and less costly, and conclusions that are more accurate as well.

Awards and Grants



BELL



CURRAN



KELLERT

ENVIRONMENTAL HEALTH PROFESSOR RECEIVES ONES AWARD

A Yale School of Forestry & Environmental Studies (F&ES) professor is one of eight scientists to receive an Outstanding New Environmental Scientist (ONES) award from the National Institutes of Health.

Michelle Bell, Assistant Professor of Environmental Health at F&ES, will receive \$500,000 to study the relationship between outdoor concentrations of ozone, a reactive form of oxygen that is a primary component of urban smog, and the incidence of respiratory disease and death in exposed populations. Bell is one of two Yale University professors to receive a ONES award. **Sven-Eric Jordt**, Assistant Professor of Pharmacology in the School of Medicine, will study the way in which certain airborne pollutants interact with sensory nerve cells in order to produce eye, nose and throat irritation.

The National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health, awarded grants totaling \$3.6 million that will support the eight scientists, each of whom is pursuing a career in environmental health research, over five years. "The ONES program is designed to provide a strong foundation for outstanding scientists who are in the early, formative stages of their careers," said David Schwartz, director of the NIEHS. "These grants will assist the scientists in launching innovative research programs that focus on human disease and the influence of the environment."

Research supported by the ONES grants will cover a broad range of environmental expo-

sure, as well as the biological responses they elicit. Each of the awardees will focus on a specific human disease or condition as it relates to a specific environmental exposure.

TROPICAL RESOURCES PROFESSOR WINS MACARTHUR "GENIUS" GRANT

Lisa Curran, Professor of Tropical Resources and Director of the Tropical Resources Institute at the Yale School of Forestry & Environmental Studies (F&ES), has been awarded a five-year John D. and Catherine T. MacArthur Foundation Fellowship. She will receive \$500,000 in unconditional support over the next five years.

Like all MacArthur Fellows, the award came as a total surprise to Curran. "It's like winning the lottery after 20 years of *Survivor* in Borneo. Actually, this has been a tremendous team effort. I've worked with some of my Indonesian colleagues for 18 years. I'm part of all the people I've met: the villagers, the loggers, the scientists and the students—from both the U.S. and Indonesia."

In announcing the award, the MacArthur Foundation said, "Through diplomatic skill, cultural sensitivity, and rigorous scientific acumen, Lisa Curran synthesizes concepts from the natural and social sciences to forge new, practical solutions for sustainable natural resource extraction and development. By developing consensus and fostering communication between diverse stakeholders..., she is substantially increasing protection efforts in endangered regions."

Curran has focused her research on the forests of Borneo and the ecology of its most