



Christine Shoemaker

## NAE ELECTEES

**Christine Shoemaker**, Cornell's Joseph P. Ripley Professor of Engineering, has been elected to the National Academy of Engineering, among the highest professional distinctions for an engineer.

Shoemaker, a professor in the School of Civil and Environmental Engineering (CEE), was cited "for development of decision-making optimization algorithms for environmental and water resources problems."

Her research focuses on cost-effective, robust solutions for environmental problems by using optimization, modeling, and statistical analyses. This includes development of general purpose, numerically efficient nonlinear and global optimization algorithms utilizing high-performance computing and applications to data from complex, nonlinear environmental systems.

Shoemaker's research is interdisciplinary; she has supervised Ph.D. students from a number of fields including operations research and information engineering and applied mathematics, as well as students in CEE.

With NSF funding from various directorates, her projects are often collaborative and include physical and biological groundwater remediation, pesticide management, ecology, climate modeling, carbon sequestration, and surface water pollutant transport in large watersheds.

Shoemaker is a distinguished member of the American Society of Civil Engineering (ASCE). She has been elected a fellow in the American Geophysical Union, ASCE and INFORMS (Institute for Operations Research and Management Science).

She also won a Humboldt Research Prize from Germany.

She initiated and led a nine-year multidisciplinary international project, sponsored by the Scientific Committee on Problems of the Environment and the United Nations Environment Program, that brought information and workshops about groundwater contamination to developing countries at a time (1987–96) when those regions were doing little to prevent contamination from industrial chemicals. Such contamination is often irreversible or extremely expensive to remove because it is in groundwater, so prevention is the best strategy.

Shoemaker, who joined the faculty in 1972, was the first woman faculty member in the College of Engineering to be awarded tenure. In 1985 she was the first woman to be an engineering department chair at Cornell. She received a national award from the Society of Women Engineers in 1991 for her scholarship and efforts to encourage women engineers during years when there were few women students or faculty members in engineering.

Membership in the National Academy of Engineering honors those who have made outstanding contributions to "engineering research, practice or education, including, where appropriate, significant contributions to the engineering literature," and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/ implementing innovative approaches to engineering education."

Also elected to the NAE this year were Mark Adamiak '75 EE, M.Eng. '76, director of advanced technologies, GE Digital Energy Multilin, "for contributions to power system protection, control, monitoring and communications"; and Amit Singhal, M.S. '95 CS, Ph.D. '97, Google fellow, Google Inc., "for contributions to information retrieval and search."

—Anne Ju

## FLYING HIGH

Two Cornell faculty members—**Gregory Fuchs** and **A. Kevin Tang**—are among this year's 48 winners of the Air Force Young Investigator Research Program.



Gregory Fuchs

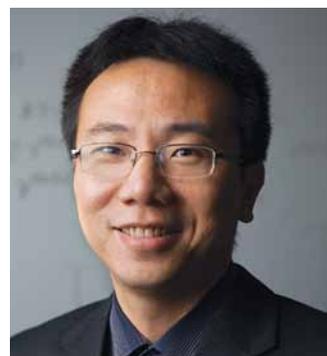
The program, administered by the Air Force Office of Scientific Research, is open to U.S. scientists and engineers who have received a Ph.D. or equivalent in the last five years and have shown "exceptional ability and promise for conducting basic research." The objective of the program is to "foster creative basic research in science and engineering; enhance early career development of outstanding young investigators; and increase opportunities for the young investigator to recognize the Air Force mission and related challenges in science and engineering."

Fuchs, assistant professor of applied and engineering physics, has been awarded \$375,000 over three years to support his research into optical methods of probing magnetization with nanoscale spatial resolution and picosecond time resolution. He plans to use these techniques to study the dynamics of magnetic oscillators and memory.

Tang, assistant professor of electrical and computer engineering, has been awarded \$375,000 over three years to conduct a research project to help monitor such large-scale networks as the Internet and power grids to avoid possible system failure and to optimize performance. The scale and complexity of such systems raise the need to quickly infer and monitor component characteristics from a relatively small number of indirect aggregate measurements. Tang's project aims at providing fundamental understanding and constructing algorithms for such measurements.

This year the Air Force received 220 proposals in such areas as aerospace, chemical, and materials sciences; physics and electronics; and mathematics, information, and life sciences.

—Susan Lang



A. Kevin Tang

## CONCERTO KING

Pianist **Eric Tan** '14 CS won the eighth annual Cornell Concerto Competition, held Dec. 11 in Barnes Hall Auditorium. Tan performed the first movement of Beethoven's Piano Concerto No. 4 in G major, accompanied by Tiffany Tsay '13.

Tan, a computer science major in the College of Engineering, studies piano with associate professor of music Xak Bjerken and is a member of CU Winds. A native of Toronto, he has won top prizes at music festivals and competitions at the national, provincial, and local levels.

Sixteen student musicians, with student and faculty accompanists, participated earlier in the day in preliminary rounds of the 2011 competition. Judges chose five students to compete in the final round.

As the winner, Tan performed a concerto as a featured soloist with the Cornell Symphony Orchestra, March 10.

The other finalists were soprano Marybeth Keiser '13, an exchange student from the Manhattan School of Music, studying music in the College of Arts and Sciences; and violinists Elaine Higashi '12, a biological engineering major in the College of Engineering; Jonathan Park '14, a psychology major in the College of Arts and Sciences; and Moriah Son '14, an environmental engineering major in the College of Agriculture and Life Sciences.

—Daniel Aloï

## NASA CHIEF

**Mason Peck**, associate professor of mechanical and aerospace engineering, has been named