

back on campus

Dean Busch-Vishniac to Step Down Next Year

Ilene Busch-Vishniac will step down as dean of the Whiting School of Engineering as of June 30, 2003, the end of her five-year term. She will remain at the School as a professor in the Department of Mechanical Engineering.

Hopkins President William R. Brody, in accepting her decision with regret, noted that next year, Busch-Vishniac assumes her role as president of the 7,000-member Acoustical Society of America, the major professional society in her discipline. He added that she also looks forward to the opportunity to resume her research in acoustics and her teaching, and to spending more time with her family. The dean and her husband, Ethan Vishniac, a professor of physics and astronomy at Hopkins, have two teenage daughters.

“Dean Busch-Vishniac’s dedicated leadership as the third dean of the Whiting School has yielded extraordinary results,” Brody observed. “The School today is stronger, larger, more diverse, and better supported than when she arrived in 1998. Ilene has fostered substantial growth in enrollment and sponsored research.” He commended her efforts in recruiting promising young scholars to the School’s faculty and in strengthening undergraduate programs. She has “overseen the extraordinarily successful establishment of the Whitaker Biomedical Engineering Institute and construction of its splendid home, Clark Hall,” Brody added, and “she provided leadership for the creation of the University’s Information Security Institute.”

During her four years as the first woman to be dean of the Whiting School:

- undergraduate Engineering enrollment has increased 20 percent;

- the number of research centers has grown from nine to 16; and
- while the Engineering faculty has increased from 111 to 116, research funding has had a dramatic growth to \$51 million (2002), up from \$34.4 million in 1998.

A national search is being launched to seek her successor as dean.

In Fluid Mechanics Research, CEAFM Continues the Legend

Although it may not be obvious to the casual observer, some of the most profound and intractable problems facing humankind today are rooted in fluid mechanics. Global climate change, ozone depletion, pollen transport, and asthma all involve the fluid commonly recognized as air. Without water, ours would be a lifeless planet, and in fact the mysteries of water movement, from the deep ocean circulation to the annoying drip of a faucet, have long challenged scientists. Anything that moves through air, water, or any other liquid is fundamentally a fluid mechanics problem.

Johns Hopkins University has a legendary reputation in fluid mechanics. In the golden years of fluid mechanics research in the 1960s and 1970s, the faculty luminaries in the Department of Mechanics at the Homewood campus were Stanley Corrsin, Leslie Kovaznay, and Clifford Truesdell. All three are deceased; the Corrsin Wind Tunnel memorializes the professor who designed and built it. As the University grew, departments branched off and the study of

traditional fluid mechanics problems flowed with them.

Researchers in this field continued to collaborate interdepartmentally at Hopkins, and eventually fluids researchers from both the Whiting School of Engineering and Krieger School of Arts and Sciences formally recognized their common interests in the late 1990s by establishing the Center for Environmental and Applied Fluid Mechanics (CEAFM). The center provides a formal means for collaboration and academic discussion.

A 1998 conference honoring Owen M. Phillips, Decker Professor of Science and Engineering (now emeritus), inaugurated CEAfm. Phillips, who taught at Hopkins for some 40 years, is renowned for his system of predicting and describing the shapes of giant ocean waves—invaluable information for building ships and oil rigs. He played an important role in creating the center, just as he had in forming the Department of Earth and Planetary Sciences in 1967.

CEAFM brings together faculty from Mechanical Engineering, Geography and Environmental Engineering, Earth and Planetary Sciences, Civil Engineering, Mathematical Sciences, Biomedical Engineering, Chemical Engineering, and Physics and Astronomy, as well as from the Applied Physics Laboratory. In a weekly seminar series, faculty discuss common interests and fluids problems. They also collaborate on research projects funded by outside agencies.

The most recent award is a five-year, \$2.5 million grant



On May 14, a dedication in honor of the Murray B. Sachs Fund in Biomedical Engineering was held in Clark Hall. The Sachs Fund was established by Arthur J. Samberg (center) in honor of Sachs (second from left), who is the Massey Professor of Biomedical Engineering and director of the Whitaker Biomedical Engineering Institute. Samberg is chairman and CEO of Pequot Capital Management, Inc. The two men have been friends since college. With them are Richard Johns (left), former chair of the Biomedical Engineering Department; Hopkins President William R. Brody (second from right); and Dean Ilene Busch-Vishniac of the Whiting School.

from the National Science Foundation (NSF) to study bio-complexity, specifically pollen transport (biological aerosol particles) in the turbulent atmosphere. The project is part of an NSF multidisciplinary initiative exploring the connections in Earth's living and nonliving components—from deep sea thermal vents to the atmosphere, from the submolecular level to ecosystems.

Last spring marked the center's inaugural research symposium, which each year will give CEA FM graduate students and postdocs a chance to showcase their work. The May 17 symposium featured projects related to the oceans, turbulence, complex media, and the atmosphere. Among the guests were colleagues and researchers from national laboratories, regional companies, and alumni.

For more information visit CEA FM's web site at www.jhu.edu/~ceafm/.



George W. Reynolds, director of Industry and University Initiatives at Northrop Grumman's Electronic Systems Sector in Baltimore, presents Dean Ilene Busch-Vishniac with a check in support of Northrop Grumman/Whiting School collaborations. The agreement includes two new fellowships as well as research, education, and consulting activities (see page 12).



The new plaza in front of Garland, Levering, and Hodson Hall improves the routes for both pedestrians and vehicles.

Great Improvements Are Taking Shape on Campus

All summer long, the Great Excavations-2 project on the Homewood campus continued to make progress, and everyone seemed to find creative ways to get around the construction. In addition to beautifying the campus, the goal of the project is to make the campus more pedestrian-friendly and improve traffic circulation.

One key improvement is in the area between Garland, Levering, and the newest classroom facility on campus, Hodson Hall. The road for vehicles is being rerouted and an open courtyard with grass, trees, and walkways is being created.

Hodson Hall opened for classes this fall, serving both the Whiting School of Engineering and the Krieger School of Arts and Sciences. The building's high-tech classrooms enable students to plug in their laptops. In its 44,000 square feet of space are also a 500-seat auditorium and facilities for the archives of the Hodson Trust, whose generous gift supported the building's construction.

For the latest updates on construction, visit the Great Excavations web site: www.jhu.edu/gx.

Studying Prescription Drug Pollution in the Nation's Waterways

“Over the past few years, scientists in Europe have found pharmaceuticals in natural waterways, sewage treatment effluents, and even in drinking water,” says A. Lynn Roberts, associate professor in the Department of Geography and Environmental Engineering (DoGEE). “Yet until very recently this issue has been largely overlooked in the United States,” she adds.

Roberts is leading a team of environmental engineers who are studying the effects of prescription drug pollution nationwide on human and aquatic life.

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DoGEE Professor A. Lynn Roberts (right) and chemistry major Michael Blumenfeld '02 use a gas chromatograph/mass spectrometer to measure extremely small amounts of pharmaceuticals in water samples.

Funded by a three-year Environmental Protection Agency grant for \$525,000, they are analyzing human pharmaceuticals and antiseptics in drinking water, sewage treatment plants, and coastal waters.

“There are many ways in which human pharmaceuticals

in the environment could produce undesirable effects on aquatic organisms or even humans,” Roberts points out. The research involves assessing which human pharmaceuticals in current use are likely to pose a risk to the environment, developing methods for their analysis

at trace levels, and testing to determine how effectively pharmaceuticals are being removed during the treatment of drinking water. The team is conducting tests to see how well pharmaceuticals are being removed at sewage treatment plants in Massachusetts and Maryland. They will also collect water samples in the upper Chesapeake Bay to check for the presence and concentration of drugs and antiseptics. And they will try to determine how efficiently nature’s self-cleansing processes eliminate these man-made pollutants.

“The millions of doses of prescription drugs that Americans swallow annually to combat cancer, pain, depression, and other ailments do not disappear harmlessly into patients’ digestive systems,” she says, “but instead make their way back into the environment, where they may contaminate drinking water and pose a threat to aquatic wildlife.”

For more information, visit www.jhu.edu/~dogee.

strong sense of the direction our profession was taking towards molecular biology, even back then, and has been at the forefront of the ‘bio-revolution’ in chemical engineering ever since. Mike is extremely well-prepared to lead the department as we develop a Hopkins biology-based chemical engineering program that will be unique to chemical engineering academia.”

Betenbaugh, a Hopkins faculty member since 1995, conducts research in genomics, recombinant DNA biotechnology, biopharmaceuticals, metabolic engineering, insect and mammalian cell culture, glycosylation engineering, and cell death processes. In recognition of his work, he was named a Fellow of the American Institute of Medical and Biological Engineers in 2001.

Civil Engineering: Robert A.

Dalrymple joined the faculty this summer as the Willard and Lillian Hackerman Professor of Civil Engineering and

chair. “We are all excited to have Tony on board, and to be our new chair,” says Assistant Professor Benjamin Schafer. “Tony has an energetic and innovative vision of civil engineering research and education. His research interests mesh well with the department’s long-standing focus on mechanics, and his affable nature makes him an outstanding mentor for students and junior faculty.”

Civil Engineering bid a fond farewell last summer to Nicholas P. Jones, chair and professor, who moved to the University of Illinois-Champaign.

Whiting School Welcomes Four New Department Chairs

Chemical Engineering:

Professor Michael J. Betenbaugh is taking the helm as department chair. His predecessor as chair, Professor Michael E. Paulaitis, notes, “I have known Mike Betenbaugh since he was a graduate student in chemical engineering at the University of Delaware, having served as a faculty member on his PhD dissertation committee. He had a



Society of Engineering Alumni Celebrates 10 Years

The SEA is an organization of Engineering alumni of the Johns Hopkins University that encourages and represents alumni interests, fosters relationships, and utilizes the resources of its members to promote the prosperity of the Whiting School of Engineering and the University.

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In 1999, Dalrymple spent a year as a visiting professor at the Whiting School. His research interests include coastal engineering, water wave mechanics, fluid mechanics, littoral processes, and tidal inlets.

Most of Dalrymple's career has been with the University of Delaware, where he founded and headed the Center for Applied Coastal Research, beginning in 1989. He also served as both assistant dean of the College of Engineering and acting chair of the Department of Civil Engineering there.

His wife, Candice Dalrymple, is an associate dean of the Krieger School of Arts and Sciences and director of the Center for Educational Resources.

Geography and Environmental Engineering (DoGEE): Professor



Benjamin F. Hobbs will serve as chair while Professor Marc Parlange is on sabbatical through August

2003 at the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland.

Hobbs, a professor at Hopkins since 1995, researches the development and application of systems analysis and economic methods to analyze energy, water, and environmental problems. He just returned from his sabbatical in Amsterdam at the Energy Research Center of The Netherlands, which explores renewable sources of energy and the reduction of fossil fuel emissions.

"Ben is a wonderful person, very enthusiastic and a good organizer," says Parlange. "I know he'll do much to continue the strong momentum DoGEE

has gained over many years as a leading program addressing multidisciplinary environmental issues."

Mechanical Engineering:



Professor Shiyi Chen is the new chair. He joined Hopkins in 1999 as an expert in computational fluid dynamics

methodologies and holds a joint appointment as a professor in the Whiting School's Department of Mathematical Sciences. Chen "is an outstanding scholar with administrative experience in his prior position as the deputy director for the Center for Nonlinear Science at Los Alamos National Laboratory," says Dean Ilene Busch-Vishniac.

Chen's broad research interests include turbulence, computational fluid dynamics, lattice Boltzmann applications, molecular dynamics, and flow in porous media. Practical applications of his research include solving problems ranging from the flow of oil and water through sandstone (oil extraction), to flow over and around tires and automobiles for industry partners, and the complex flow patterns of granular materials, such as sand or snow.

Chen succeeds Professor K.T. Ramesh, who stepped down as chair and is taking a one-year sabbatical at Cambridge University, where he is furthering his research on phenomena at the nanoscale. Ramesh holds a joint appointment in Materials Science and Engineering.

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