2000

IWU Hosts Annual John Wesley Powell Research Conference

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BLOOMINGTON, Ill.--Harvard physicist Mara Prentiss will keynote the 11th annual John Wesley Powell Student Research Conference hosted by Illinois Wesleyan University on April 14 and 15.

Featuring approximately 80 undergraduate research projects in academic areas including biology, chemistry, economics, English, history and political science, the conference gives students the opportunity to gain valuable research experience, present their findings in a public forum and further their interest in a particular field. Students will examine topics such as: "The Effects of Alcohol on the Amygdala" (Psychology), "Economic Influences on the Stock Market" (Economics), and "The Effect of Natural Barriers in a Marine Reserve on Queen Conch Spillover to Surrounding Fished Areas" (Biology).

"Since I hope to get my M.A. and Ph.D. in Medieval Literature or Medieval Studies, my project has allowed me to focus more on that time period and its literature," said conference participant Rae Marotta, senior English Literature major from McHenry, Ill., whose project examines contemporary theories for a historical prototype for King Arthur.

According to Roger Schnaitter, conference coordinator and IWU associate provost, the conference also allows students to receive recognition and exposure outside IWU. Some student projects have led to published research and others have gone on to participate in regional and national research conferences.

Schedule of Conference Events

Conference activities begin Friday, April 14, with the Phi Kappa Phi invitation-only banquet. At 7 p.m., for the first time since its inception 11 years ago, the conference will include the fine arts in its programming with performances of original musical works by IWU music composition students in Evelyn Chapel, 1301 N. Park St., Bloomington. At 8 p.m., the sophomore and senior art exhibition and reception will follow in the Merwin Gallery at the Joyce Eichhorn Ames School of Art, 302 E. Graham St., Bloomington.

The second day of the conference begins at 9 a.m. on April 15 with keynote speaker and renowned physicist Mara Prentiss' presentation "Manipulating Matter with Fields" in the Anderson Auditorium of the Center for Natural Sciences, 201 E. Beecher St., Bloomington. Prentiss will discuss how electric and magnetic fields are used to manipulate particles. Prentiss' speech, which is free and open to the public, will be followed by the first poster session at 10 a.m. in the Science Commons and the first session of oral presentations by the participants at 11 a.m. in the Beckman and Anderson Auditoriums. Posters are used to visually explain the student's research projects.

After a lunch break, a second poster session follows at 2 p.m. in the Science Commons and a second session of oral presentations will begin at 3 p.m. in the Beckman and Anderson Auditoriums.

The conference will conclude at 4:30 p.m. in the Science Commons with a certificate presentation ceremony given by Schnaitter and Michael Seeborg, IWU professor of economics.

About Mara Prentiss

Originally from Cleveland, Ohio, Prentiss, an accomplished physicist and Harvard professor, attended Wellesley College majoring in physics, math and philosophy. After graduation in 1980, Prentiss attended graduate school at the Massachusetts Institute of Technology (MIT). Prentiss' thesis project about the first observation of channeling in optical standing waves led to important developments such as optical crystals and atom lithography--the idea that standing wave fields could be used to focus atoms into parallel arrays of narrow lines.

After graduation from MIT in 1983, Prentiss joined the technical staff at Bell Laboratories, where she directed an experiment that demonstrated the first Magneto Optical Trap and the first atom trapping from an uncooled gas. She also developed a new method of slowing and cooling atomic beams, made the first observation of the force due to Doppleron resonance and made the first observation of three-dimensional confinement in optical standing waves.

Since becoming a professor of physics at Harvard in 1991, Prentiss has continued to expand the field of atom lithography. This effort has been aided by the creation of the US Consortium for Light Force Dynamics, a collaboration directed by Prentiss, which includes groups from Harvard, National Institute of Standards and Technology (NIST) Gaithersburg, the University of Colorado, Colorado State University, the Institute for Theoretical Atomic and Molecular Physics and AT&T Bell Laboratories.

Prentiss' areas of research include manipulating neutral atoms, adhesion to surfaces and optical devices. Prentiss recently demonstrated an "Atom Waveguide" on a chip showing that microfabricated wires on a substrate can guide atoms along the surface of a substrate, just as an optical fiber transmits light. Practical applications of this research include improving the accuracy of gyroscopes that guide airplanes.

Prentiss also is researching the force that binds the E. coli bacteria to surfaces. Prentiss was able to measure the effects of various inhibitors that can prevent the binding of E. coli to a surface. The inhibitors offer important clinical alternatives to antibiotics therapies.

Additionally, Prentiss is working on using light to create nanoscale patterns on surfaces whose width is limited by the Heisenberg uncertainty principle. Prentiss' research may be useful in creating small regular patterns on surfaces for applications in microelectronics, astronomy and biology.

Prentiss has received the Naval Young Investor Award, Phi Beta Kappa teaching prize and two Hoopes teaching prizes while a member of Harvard's faculty. Prentiss has also received the

Presidential Young Investigator Award and was named a distinguished travelling lecturer by the American Physical Society.

Prentiss is passionate about her research and values student research opportunities like the John Wesley Powell Research Conference. "Classwork and research are completely different experiences. The only way to know if one enjoys research is to do it," said Prentiss. "There is an enormous thrill that accompanies visualizing and carrying out a project that no one has ever done before."

About John Wesley Powell

The conference is named for scientist, Major John Wesley Powell, a Civil War veteran who lost his right arm in battle. After his service in the war in 1865, Powell accepted the position of professor of geology and museum curator at IWU.

Powell was the first U.S. professor to use field work such as collecting fossils, minerals and plants and observing animals in their natural habitat to teach students science. In 1867, Powell led IWU students to the Rocky
Mountains--the first expedition of its kind in the history of U.S. higher education.

Powell was honored and respected by the scientific community and his titles gave him well-deserved recognition. Powell was the founder and president (1878-1888) of the Cosmos Club, the founder and president of the Anthropological Society of Washington, one of the earliest members of the Biological Society of Washington and an organizer of the Geological Society of Washington. Powell helped also establish the National Geographic Society and the Geological Society of America.

In 1888, Powell was elected president of the American Association for the Advancement of Science. Powell was also the first director of the Smithsonian Institution's Bureau of Ethnology.

About Illinois Wesleyan University

IWU, founded in 1850, enrolls about 2,070 students in a College of Liberal Arts, and individual schools of Music, Theatre Arts, Art and Nursing. Since 1994, these facilities have been added to the IWU campus: a $15 million athletics and recreation center, a $25 million science center, a $6.8 million residence hall, a $5.1 million Center for Liberal Arts, and a $1.65 baseball stadium. Construction is underway on a $26 million library and $6 million student center. Kiplinger's Personal Finance Magazine ranks Illinois Wesleyan University 12th among the nation's 1,600 private colleges in providing top-quality education at an affordable cost. Also sharing IWU's rank are Princeton and Dartmouth.

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