

Sigma Xi Today

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1999 Forum Focuses on Education Reform

Undergraduate education reform will be the focus of the 1999 Sigma Xi Forum which will be held in Minneapolis, Minnesota, November 4-5 in conjunction with Sigma Xi's annual meeting. Tentatively titled *Reshaping Undergraduate Science and Engineering Education: Tools for Better Learning*, this will be an interactive conference where educators and administrators from academia and industry can experience innovative science instruction, experiment with state-of-the-art educational products and discuss a variety of models for institutional reform, science curriculum and pedagogy with their developers.

The goal of the meeting will be to employ principles of interactive learning while exploring issues and methods associated with educational reform throughout the world and to initiate an interdisciplinary discussion of science education reform by the professional societies.

In addition to Sigma Xi chapter representatives, the forum is expected to attract participants from colleges, universities and other institutions from around the country. Additionally, a call for papers will be distributed during the spring of 1999.

The format and the program itself will employ the principles of active learning and, hence, will feature only a few traditional plenary talks from leaders in undergraduate science education reform. Much of the program will highlight hands-on, facilitated demonstrations of best practices, opportunities to explore the latest technological tools for education, small-group discussions and problem-solving sessions.

Working groups will address various challenges of implementing change

at an institutional level and will feature moderators including educators, researchers and administrators who have catalyzed or facilitated change in institutions of various types, from four-year colleges to major research universities.

Small-group discussions will explore themes and ideas that are put forward in the National Science Foundation (NSF) report *Shaping the Future: New Expectations for Undergraduate Education In Science, Mathematics, Engineering, and Technology*. These include fostering administrative and cultural changes in academic communities, developing curricula and departmental goals that encourage science learning for all students, using pedagogy that encourages inquiry-based learning and critical thinking, and forming partnerships with business, industry and other academic and non-profit institutions to catalyze institution-wide reform.

Leaders in both science and education have recognized that producing a scientifically literate population will require that, "all students have access to supportive, excellent undergraduate education in science,

mathematics, engineering and technology, and all students learn these subjects by direct experience with the methods and processes of inquiry" (*Shaping the Future*, NSF 96-139). New initiatives in science, mathematics, engineering and technology education benefit both the scientific community and society in general by including more citizens in the scientific enterprise.

The teaching methods that are effective in providing this education are now established and many excellent examples of best practices are available. The 1999 Sigma Xi forum will both explore and employ these practices.

For program updates and information about previous forums in the Sigma Xi series, visit <www.sigmamaxi.org>. Proceedings volumes are available for \$10 each for the following forums by writing to Forum Coordinator, Sigma Xi, The Scientific Research Society, P.O. Box 13975, Research Triangle Park, NC 27709.

Trends in Industrial Innovation: Industry Perspectives & Policy Implications—Washington, D.C., 1997

Science, Technology and the Global Society—San Diego, 1996

Vannevar Bush II: Science for the 21st Century—Research Triangle Park, N.C., 1996

Scientists, Educators and National Standards: Action at the Local Level—Atlanta, 1994

Ethics, Values and the Promise of Science—San Francisco, 1993

Global Change and the Human Prospect: Issues in Population, Science, Technology and Equity—Washington, D.C., 1991

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Chapters Honored for Exemplary Programs

Ten Sigma Xi chapters were recognized at the annual meeting in Vancouver for outstanding programmatic activity during the fiscal year ending June 30, 1998. Nominees were chosen by the Regional Directors based on chapter annual reports, and finalists were selected by the Committee on Qualifications and Membership.

Chapters were singled out for activities and programs during the year that supported and furthered Sigma Xi's mission and goals in an exemplary manner, going above and beyond what is required to remain in good standing.

Certificates of Excellence were presented to:

Centers for Disease Control and Prevention for their lecture/seminar series and an innovative "Women in Science" program that featured speakers from the U.S., Australia, Vietnam, Kenya, Brazil, India and Russia. The chapter also presented several awards, including its Sigma Xi-Walter R. Dowdle Award for Achievement.

Clemson University for promoting research at all educational levels, through presentations at local schools, undergraduate and graduate symposiums and awards to students and teachers. The chapter is also involved in an innovative high school research grants program that made awards to 33 students.

Ford Motor Company for their innovative Saturday morning high school program that included a talk and a number of demonstrations for about 200 local students and their teachers, and for a strong public lecture series on topics of broad interest, from the space station Mir to the evolution of technology.

Howard University for an array of activities, including a four-day symposium on "The Genetics of Disease," participation in the Congressional Visits Day, awards to faculty and students, an intensive summer workshop for middle school teachers,

minority mentoring and outreach presentations in local schools.

Mississippi State University for outstanding participation by chapter members as expert sources for the local and statewide news media, a monthly Sigma Xi speaker series and co-sponsorship of a special panel discussion on "Reforming Undergraduate Science Education," among other activities.

South Dakota State University for a strong, balanced program that included organizing a regional science and engineering fair for about 300 elementary and high school students. Chapter members also worked with teachers and students as mentors and sponsored graduate research paper awards.

Southern Illinois at Carbondale for inaugurating an annual research poster conference that has grown in seven years into a campus-wide Research Day. The chapter also honored student and faculty researchers and sponsored or co-sponsored a diverse public lecture series featuring seven distinguished speakers.

Texas A&M University for support of high school science fairs, promotion of science and a symposium on "Developing Student-Based Research Programs" that included panel discussions and plenary talks. The chapter also presented awards to outstanding researchers and teachers.

Tifton for an impressive weekly seminar series in which more than 40 speakers made presentations on individual research projects, educational issues and other topics. Among other chapter activities, 36 members served as judges for the Abraham Baldwin College District Science Fair.

Vermont University for their efforts in combining Sigma Xi chapters at the University of Vermont, Norwich University, St. Michael's College and Middlebury College into a strong statewide program. The chapter also sponsored research seminars, student competitions and other activities.

15 Chapters Initiate 1,100 New Members

Certificates of Recognition were awarded to the following 15 chapters which initiated the most new members during the past fiscal year.

MIT	226
Brown University	216
Smith College	83
Carleton College	75
Swarthmore College	73
Union College	66
Univ. of Missouri at Columbia	57
Mount Holyoke	57
Claremont	47
McGill University	47
Oberlin College	47
Columbia University	46
Princeton	46
Southern Maine	45
Williams College	39

Space Station Videoconference Set for February 25

Sigma Xi chapters are reminded to sign up to establish satellite downlinks for the Sixth Annual International Space Station teleconference on February 25 from 1-3 p.m. (ET).

Sponsored by the National Aeronautics and Space Administration, the teleconference is titled *International Space Station: Make It Your Business* and will feature a diverse panel of experts who will be available to answer questions.

For more information about the program and a license form, consult Sigma Xi's home page at <www.sigmaxi.org>, where information on the teleconference is included under "Events," or call 800-243-6534.

Seven Honored with Presidential Mentoring Awards

Seven Sigma Xi members were among 10 educators nationally to receive 1998 Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring, a program administered and funded through the National Science Foundation.

The recipients were honored by President Clinton at a ceremony in the White House. The award includes a \$10,000 grant and recognizes outstanding efforts to increase the participation of underrepresented groups in mathematics, engineering and science in kindergarten-12th grade and through the graduate level.

The Sigma Xi members among the honorees included Winsor E. Alexander, North Carolina State University; Sheila E. Browne, Mount Holyoke College; D. Allan Butterfield, University of Kentucky; Billy Joe Evans, University of Michigan at Ann Arbor; Aubrey Gorbman, University of Washington; Nina M. Roscher, American University; and Herbert B. Silber, San Jose State University.

The other three recipients were Jesse M. Nicholson, Howard University; Su-Seng Pang, Louisiana State University; and Armando A. Rodriguez, Arizona State University.

Annual Giving Reminder

An important way to show your support for Sigma Xi is to make a contribution to its annual giving program. Member participation is critically important to the Society's programs and operations.

Many companies will match employees' contributions to non-profit organizations such as Sigma Xi. Tax-deductible contributions may be sent to the Office of Development, Sigma Xi, P.O. Box 13975, Research Triangle Park, NC 27709.



Chapters Sponsor Presidential Classroom Participants

Sponsoring outstanding high school students for the week-long Presidential Classroom in Washington, D.C., has become a popular Sigma Xi chapter activity. It gives students a chance to explore the inner workings of the American political process through seminars led by government officials, student caucuses and visits with senators and representatives, among other activities. April 1 is the application deadline for 1999 summer sessions (visit www.presidentialclassroom.org). Chapel Hill (N.C.) High School student Darin Stojanovic participated in the science, technology and public policy program at the 1998 Presidential Classroom thanks to sponsorship by the Duke University Chapter, represented here by Duke Senior Vice President Charles E. Putman. (Duke photo by Jim Wallace)

Sigma Xi Members Win Nobel Prizes

Election to Sigma Xi has been an early milestone in many distinguished careers. In the Society's history, more than 175 members have received the Nobel Prize, and four members joined this illustrious group in 1998.

Robert F. Furchgott and Louis J. Ignarro shared the 1998 Nobel Prize in Physiology or Medicine with Ferid Murad for their discoveries concerning nitric oxide as a signaling molecule in the cardiovascular system.

Furchgott is a pharmacologist at the State University of New York Health Science Center in Brooklyn and was elected to Sigma Xi by the Northwestern University Chapter in 1939. Ignarro, a pharmacologist at the University of California at Los Angeles, has been a Sigma Xi member since 1966, when elected by the University of Minnesota Chapter. Murad is a pharmacologist at the University of Texas at Houston.

Walter Kohn, a research physicist at the University of California at Santa Barbara, and John Pople, a Northwestern University chemist, shared the 1998 Nobel Prize in Chemistry. Kohn was honored for development of the density-functional theory in the bonding of atoms, and John Pople, for development of computational methods in quantum chemistry that allowed the theoretical study of molecules, their properties and how they act together in chemical reactions.

Kohn has been a Sigma Xi member since 1949, when he was elected by the Harvard University Chapter. Pople was elected to membership by the Carnegie Institute of Technology Chapter in 1965.

Science News Service Available

Sigma Xi members can now sign up to receive daily e-mail updates on science news stories from major U.S. newspapers. "Science in the News" is prepared by Martin Baucom, coordinator for Sigma Xi's Media Resource Service, as a daily feature on the service's Web site.

Members who request it can receive a daily digest of the top science stories of the day, in the form of an e-mail message with the headlines and brief summaries of these news stories. The message also includes hotlinks to Web sites containing full text of the articles. Almost 6,000 members expressed interest in the service on this year's dues notices. The service is available to Sigma Xi members at no charge. To sign up for it, contact: science-in-the-news@sigmaxi.org.

Expeditions Plan Exotic Itinerary

Join fellow Sigma Xi members for exciting, educational tours of exotic places around the world. The 1999 itinerary for Sigma Xi Expeditions includes a trip down the jungle rivers of South America, as well as a journey to Siberia and Lake Baikal.

Other destinations in 1999 include Costa Rica and Panama, the Galapagos Islands, Egypt and the Nile, Jamaica and the Cayman Islands, the Aegean, Britain, Alaska, Ireland, Peru, the Antebellum South and the Himalayas.

These trips are designed to satisfy the voyager's curiosity about the places they visit. Naturalists and other prominent guest speakers provide unique insights during the trips. For more information visit www.sigmaxi.org.

Space is limited. Early reservations are recommended. For a brochure, call Sigma Xi Expeditions at 800-252-4910 or 408-252-4910 or write to Betchart Expeditions, Inc., 17050 Montebello Road, Cupertino, CA 95014-5435.

Chapter Web Notes

The following chapter activities were gleaned from the more than 100 chapter home pages linked to www.sigmaxi.org.

University of Michigan Chapter members were among the developers of a faculty forum in October inspired by the controversial Boyer Commission Report, *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. The keynote speaker was Shirley Strum Kenny, president of the State University of New York at Stony Brook and chair of the study, which was funded by the Carnegie Foundation for the Advancement of Teaching. ■ The **University of Calgary Chapter's** 1998-99 lecture series revolves around hot topics in science, medicine and engineering and includes a talk by Tom Keenan, dean of continuing education, on "Ten Ideas that Will Change the Face of Computing." ■ Each year, the **University of Nebraska Chapter** provides several travel grants to students to partially cover costs associated with presenting research results at scientific meetings. ■ The **District of Columbia Chapter** sponsored a talk this fall by Sigma Xi Distinguished Lecturer Warren M. Washington, one of the world's leading experts in computer modeling of the earth's climate. He is head of the Climate Change Research Section at the National Center for Atmospheric Research in Boulder, Colorado. ■ The **DuPont Chapter** set up a lunch time seminar series this fall to view and discuss *A Science Odyssey*, a dynamic and dramatic five-part special hosted by Charles Osgood that first aired on PBS in January 1998. ■ As part of its fall program series, the **Greater Des Moines Area Chapter** sponsored a talk by Bryan Larsen, dean of research at the University of Osteopathic Medicine and Health Sciences, on "Issues in Commercialization of Science." ■ Abstracts for the 1998 and 1997 Student Poster Symposiums sponsored by Sigma Xi and the Office of Research/Graduate School are available on the **University of Mississippi Chapter's** Web site. ■ The **University of Illinois at Chicago Chapter's** fall programs included a talk on "Macromolecules, Models and Motions" by R. Byron Bird, professor emeritus of chemical engineering at the University of Wisconsin at Madison. ■ The **Northwestern Pennsylvania Chapter** sponsored talks this fall on "The Biology of Maple Syrup" by Eric Randall, "The Archeology of the South Gobi" by David Hyland and "Wine Odors and Flavors" by Mary Chisolm.

Bridge to Asia Requests Magazines

Ever wonder what to do with back issues of *American Scientist*? You can help students and researchers in developing countries by contributing them to a non-profit organization called Bridge to Asia.

Bridge to Asia is interested in receiving back issues of *American Scientist* and will forward them to libraries, students and teachers in Asia. Since its founding in 1987, the San Francisco organization has sent 1.25 million books to China and 250,000 to Vietnam, Cambodia and the Philippines. Foundations, corporations,

individuals and government agencies support these projects with funds, materials and services.

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