

ACADEMIC PROGRAMS AND CENTERS, AND INDEPENDENT RESEARCH LABORATORIES, CENTERS, AND INSTITUTES

Vice Provost and Dean of Research and Dean of the Independent Laboratories, Centers, and Institutes: Ann M. Arvin

Independent Research Laboratories, Centers, and Institutes perform multidisciplinary research that extends beyond the scope of any one of the University's organized schools.

The following laboratories, centers, and institutes report to the Vice Provost and Dean of Research:

Stanford Institute for Economic Policy Research
Geballe Laboratory for Advanced Materials
Edward L. Ginzton Laboratory
Global Climate and Energy Program
W. W. Hansen Experimental Physics Laboratory
Stanford Humanities Center
Freeman Spogli Institute for International Studies
Human-Sciences and Technologies Advance Research Institute
Kavli Institute for Particle Astrophysics and Cosmology
Photon Ultrafast Laser Science and Engineering
Precourt Institute for Energy Efficiency
Stanford Center on Longevity
Stanford Program for Bioengineering, Biomedicine, and Biosciences (BioX)
Stanford Institute for the Quantitative Study of Society
Woods Institute for the Environment
X-Ray Laboratory for Advance Materials

The Hoover Institution on War, Revolution and Peace and the Stanford Linear Accelerator Center (SLAC) report to the President and Provost. SLAC is independently operated under a contract with the Department of Energy.

Following is a description of the activities of these organizations and other academic programs and centers, including research activities, and where applicable, courses offered.

GEBALLE LABORATORY FOR ADVANCED MATERIALS

Director: Zhi-Xun Shen

Deputy Director: Paul McIntyre

Web Site: <http://www-lam.stanford.edu>

The Geballe Laboratory for Advanced Materials (GLAM) is an Independent Laboratory that reports to the Dean of Research. The Laboratory supports the research activities of more than 20 faculty members from the departments of Applied Physics, Chemical Engineering, Chemistry, Electrical Engineering, Materials Science and Engineering, Mechanical Engineering, and Physics. The multidisciplinary foundations of faculty, students, and research provide a dynamic academic environment for a broad spectrum of scientific research areas including high temperature superconducting materials and devices, mesoscopic devices, magnetic recording and storage media materials, electronic materials, opto-electronic materials, nanoscale materials and phenomena, nanoprobe devices, highly correlated electronic systems, computational materials science, condensed matter theory and physics, polymeric and biological materials, crystal growth, and thin film synthesis of complex oxides.

GLAM also has a newly remodeled Stanford Nanocharacterization Laboratory which provides advanced materials characterization and synthesis facilities for its members as well as for the Stanford materials research community at large. The instruments include a focused ion beam (FIB), scanning electron microscopy (SEM), scanning probe microscopy (SPM), transmission electron microscopy (TEM), x-ray diffraction analysis (XRD), x-ray photoelectron spectroscopy (XPS), and high resolution Auger electron spectroscopy (AES) for characterization and thin film deposition capabilities for synthesis of materials. These facilities are managed by professional staff who also conduct research and development of new tools and techniques in areas related to advanced materials synthesis and characterization. GLAM is also home to the Center for Probing the Nanoscale, a nanoscale science and engineering center sponsored by the National Science Foundation, and to the Stanford Center for Magnetic Nanotechnology. GLAM also maintains a strong link to the X-ray Laboratory for Advanced Materials at the Stanford Synchrotron Radiation Laboratory.

The Geballe Laboratory for Advanced Materials is housed in the Moore Materials Research Building and McCullough Building complex.

STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH

Director: John B. Shoven

Deputy Director: Gregory Rosston

Institute Office: 579 Serra Mall

Phone: (650) 725-1874

Web Site: <http://siepr.stanford.edu>

The primary mission of the Stanford Institute for Economic Policy Research (SIEPR) is to encourage and support research on economic policy issues in areas such as economic growth, technology policies, environmental and telecommunication regulation, tax reform, international trade, and monetary policy. SIEPR pursues four interrelated goals in support of this mission: (1) facilitating graduate student and faculty research on economic policy issues; (2) building a community of scholars conducting policy research; (3) disseminating research findings broadly; and (4) linking academics at Stanford with decision makers in business and government.

SIEPR is a University-wide research institute, involving economists from the schools of Business, Engineering, Law, Humanities and Sciences, as well as the Hoover Institution and the Institute for International Studies. Affiliated faculty and students maintain appointments in their home de-

partments while working on SIEPR projects. In addition, scholars visiting from other institutions may apply for affiliation with SIEPR.

Much of the research at SIEPR takes place in its three research centers and six programs. The Stanford Center for International Development (SCID; Roger G. Noll, Director) fosters research on the economic problems of developing economies and economies in transition, as well as analyzing the political aspects of economic policy reform and historical episodes of reform. For more information about this center call (650) 725-8730. The Center on Employment and Economic Growth (CEEG; Tim Bresnahan, Director) is focusing on the relationship between long-term economic growth, the economic success of individuals and families in their jobs and careers, and the role played by higher education and how it can supply workers and technology in the work force. The program on regulation is part of this center. The Center for Public and Private Finance (CPPF; John B. Shoven and Michael J. Boskin, co-Directors) encompasses work on macroeconomics and monetary policy, tax and budget policy, and finance.

Separate research programs within SIEPR and their directors are the California Policy Program (Thomas MaCurdy); the Energy, Natural Resources, and the Environment Program (James L. Sweeney); the Knowledge Networks and Institutions for Innovation Program (Paul A. David); the Program on the Japanese Economy (Masahiko Aoki); and the Program on Market Design (Susan Athey and Paul Milgrom).

PRECOURT INSTITUTE FOR ENERGY EFFICIENCY

Director: James L. Sweeney

Web Site: piee.stanford.edu

The Precourt Institute for Energy Efficiency (PIEE), founded in October 2006, conducts research and analysis through interdisciplinary teams of faculty, postdoctoral fellows, graduate students, and undergraduates students. The institute's mission is to improve opportunities for and implementation of energy efficient technologies, systems, and practices, with an emphasis on economically attractive deployment. Research includes technology development, economic analysis, policy analysis, and behavioral research.

PIEE adopts a broad systems approach, examining links among technology, policy, and market diffusion in areas such as: energy-efficiency problems in economic sectors such as buildings, transportation, and electric power; supply- and demand-side barriers and solutions to energy-efficiency challenges; combining engineering, economic, and political expertise in devising solutions to energy-efficiency challenges; and the decision making environment in corporations, public organizations, and households.

GEBALLE LABORATORY FOR ADVANCED MATERIALS

Director: Zhi-Xun Shen

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superconducting materials and devices, mesoscopic devices, magnetic recording and storage media materials, electronic materials, opto-electronic materials, nanoscale materials and phenomena, nanoprobe devices, highly correlated electronic systems, computational materials science, condensed matter theory and physics, polymeric and biological materials, crystal growth, and thin film synthesis of complex oxides.

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EDWARD L. GINZTON LABORATORY

Director: Robert L. Byer

Deputy Director: Olav Solgaard

Web Site: <http://www.stanford.edu/group/ginzton>

The Ginzton Laboratory houses the research activities of a number of faculty members from the departments of Applied Physics, Electrical Engineering, and Mechanical Engineering. The multidisciplinary foundations of faculty, students, and research provide a dynamic academic environment for scientific research in the fields of photonic science and engineering, quantum science and engineering, and nanoscience and engineering, including fiber optics, laser physics and applications, mesoscopic devices, microelectromechanical and microacoustic devices and systems, optoelectronic devices and systems, photonics, nanophotonics and photonic crystals, scanning optical microscopy, quantum cryptography and computing, tunneling and force microscopy, and ultrafast and nonlinear optics.

W. W. HANSEN EXPERIMENTAL PHYSICS LABORATORY (HEPL)

Director: Blas Cabrera

Web Site: <http://hepl.stanford.edu>

HEPL is an independent laboratory celebrating over 50 years of fundamental science and engineering research. HEPL faculty and students are engaged in research in accelerator physics, astrophysics, dark matter in the universe, free electron lasers, fundamental tests of relativity in space, gamma ray observations, gravitational wave detection, quantum condensed matter, and space based solar physics studies. Many of the programs involve satellite-based studies in fundamental physics and engineering.

HOOVER INSTITUTION ON WAR, REVOLUTION AND PEACE

Director: John Raisian

Web Site: <http://www-hoover.stanford.edu>

The Hoover Institution, founded in 1919 by Stanford alumnus Herbert Hoover, is a public policy research center devoted to the advanced study of politics, economics, and political economy, both domestic and foreign, as well as international affairs. Hoover fellows are the foundation of the research program. This varied and distinguished community of scholars strives to conceive and disseminate ideas defining a free society within the framework of three programs:

American Institutions and Economic Performance—Focus is on inter-relationships of U.S. political and legal institutions and economic activity, often referred to as political economy.

Democracy and Free Markets—Focus is on on political economy in countries around the world.

International Rivalries and Global Cooperation—Focus is on inter-relationships among countries, by examining issues of foreign policy, security, and trade.

By collecting knowledge, generating ideas, and disseminating both, the Institution seeks to secure and safeguard peace, improve the human condition, and limit government intrusion into the lives of individuals, all of which are consistent with three prominent values: peace, personal freedom, and the safeguards of the American system.

HUMAN SCIENCES AND TECHNOLOGIES ADVANCED RESEARCH INSTITUTE (H-STAR)

Executive Committee: Keith Devlin, Junco Norton, Roy Pea, Byron Reeves, Tom Wasow

Web Site: <http://hstar.stanford.edu>

H-STAR (Human Sciences and Technologies Advanced Research) is a new Stanford interdisciplinary research institute focusing on how people use technology, how to better design technology to make it more usable and more competitive in the marketplace, how technology affects people's lives, and the innovative use of technologies in research, education, art, business, commerce, entertainment, communication, national security, and other walks of life. Among the problems at the heart of the H-STAR research agendas are:

Reducing complexity of technology to enable its universal uses for work, learning and other vital sectors of life

Closing digital divides across class, race, gender, age, and nations, so that access to and fluencies in technologies provide equal opportunities to learn and work productively

Accelerating innovation in the creation and diffusion of products and services that better meet human needs

Solving security and trust problems of computing, communications, and information systems at home and work and in governmental affairs

Ensuring safety and health with human-centered technology innovations

Within H-STAR are two interdisciplinary centers, CSLI (the Center for the Study of Language and Information) and SCIL (the Stanford Center for Innovations in Learning), and an industry partners program, Media X.

CENTER FOR THE STUDY OF LANGUAGE AND INFORMATION

Director: Tom Wasow

Executive Director: Keith Devlin

Center Offices: Cordura Hall

Mail Code: 94305-4115

Web Site: <http://www-csli.stanford.edu>

CSLI supports research at the intersection of the social and computing sciences. It is an interdisciplinary endeavor, bringing researchers together from academe and industry in the fields of artificial intelligence, computer science, engineering, linguistics, logic, education, philosophy, and psychology. CSLI's researchers are united by a common interest in communication and information processing that ties together people and interactive technology.

The technologies of interest at CSLI, at the cutting edge of the information revolution, include natural language processing, voice/user interfaces, ubiquitous computing, collaborative work environments, handheld devices, information appliances, automatic language translation, conversational interfaces, machine learning, intelligent agents, electronic customer relationship management, and distance learning applications.

A primary goal of CSLI is to have a substantial and long-term intellectual impact on the academic and business communities involved with interactive technology. The center's industry research partners and sponsors have access to ideas, faculty, students, and laboratories. Partners can share in the intellectual property of CSLI, and in the governance committees of the center that establish research directions and funding priorities. CSLI accelerates knowledge transfer to products and services by involving executives and researchers in Stanford classrooms. CSLI partners can meet Stanford students studying in over 20 degree programs.

Course work related to the research at CSLI can be found in the "Program in Symbolic Systems" section of this bulletin.

STANFORD CENTER FOR INNOVATIONS IN LEARNING

Director: Roy Pea

Center Offices: Wallenberg Hall (Building 160)

Web Site: <http://scil.stanford.edu>

The Stanford Center for Innovations in Learning (SCIL) conducts scholarly research to advance the science, technology, and practice of learning and teaching from early childhood through postsecondary education. The center brings together teachers, scholars, and students from around the world to study how to improve formal and informal learning across cultural boundaries.

SCIL is housed in Wallenberg Hall, a state-of-the-art testing ground for technology applications in the classroom. With the support of SCIL technical and advisory staff, more than 70 professors and instructors have taught courses in Wallenberg Hall.

SCIL programs are multidisciplinary and collaborative in nature and include the LIFE Center (Learning in Informal and Formal Environments), a research endeavor funded by the National Science Foundation whose researchers are working toward the development of an integrated multidisciplinary science of learning. Engaging more than 40 faculty members and researchers from the learning sciences, psychology, education, communications, computer science, and developmental, cognitive, and social neuroscience, LIFE is a collaboration with the University of Washington and SRI International.

In addition to its research work, SCIL provides year-round technical and advisory support to University instructors.

MEDIA X

Web Site: <http://mediax.stanford.edu>

Media X builds bridges between faculty and student scholars at Stanford and thought leaders from influential companies to address questions of importance within academia and industry. Activities are driven by the inspiration that emerge at the intersections of industry need and academic research, of various disciplines addressing the same question, and of people and technology.

STANFORD HUMANITIES CENTER

Director: John Bender

Associate Director: Matthew Tiewis

Web Site: <http://shc.stanford.edu>

The Stanford Humanities Center promotes research and education in the humanities at Stanford and nationwide. In particular, it stresses work of an interdisciplinary nature, accomplished through the following programs: one-year residential fellowships for Stanford faculty, faculty members from other institutions, and Stanford graduate and undergraduate students; public presentations such as lectures, conferences, and publications; and a research workshop program that brings faculty and graduate students together regularly to advance ongoing research on topics of interdisciplinary interest.

Fellows are selected on the basis of an open competition. They pursue their own research and participate in a weekly seminar at the center throughout the year. Faculty fellows also contribute to the intellectual life of the Stanford community through activities such as giving departmental courses, participating in ongoing research workshops, or organizing conferences.

CENTER FOR THE INTERDISCIPLINARY STUDY OF SCIENCE AND TECHNOLOGY

Center Director: Michael Friedman

STS Undergraduate Director: Robert McGinn

HPST Graduate Director: Jessica Riskin

Executive Committee: Keith Baker, Paula Findlen, Michael Friedman, Robert McGinn, Eric Roberts

Phone: (650) 725-0119; 725-0714

Web Site: <http://cisst.stanford.edu>

The Center for the Interdisciplinary Study of Science and Technology (CISST) brings together faculty, undergraduate and graduate programs, and research initiatives concerned with understanding science and technology in an interdisciplinary context. It is concerned equally with the historical, philosophical, and cultural study of science, technology, and medicine, and with critical analysis of issues raised by scientific and technological innovations in contemporary society. CISST houses two major programs: HPST (History and Philosophy of Science and Technology) and STS (Science, Technology, and Society); see their respective sections in this bulletin for their programs. CISST also sponsors visiting scholars, postdoctoral researchers, workshops, and speakers, providing a bridge between the humanities and social sciences on the one hand, and the sciences and engineering on the other.

At the undergraduate level, CISST houses STS, an undergraduate major that grants both B.A. and B.S. degrees. The STS major is designed to foster understanding of issues raised by the natures, consequences, and social shaping of technology and science in the contemporary world. To this end, the STS curriculum combines interdisciplinary, humanistic, and social scientific studies of science and technology in society with attainment of either technical literacy or fundamental understanding in some area of engineering or science. CISST also offers an honors program in STS that is open not only to STS majors but also to students in other majors who wish to pursue a senior honors project that addresses a research question arising from the relations among science, technology and society. Prospective majors or honors students should consult the STS section in this bulletin.

At the graduate level, CISST houses an interdisciplinary graduate program, the Program in History and Philosophy of Science and Technology (HPST), jointly administered by the History and Philosophy departments; it involves faculty and students in these and other departments in the humanities. Prospective students interested in applying to the graduate program should consult the "History and Philosophy of Science and Technology" section of this bulletin, and the admissions requirements of the department in which they wish to apply for a M.A. or a Ph.D.

FREEMAN SPOGLI INSTITUTE FOR INTERNATIONAL STUDIES

Director: Coit D. Blacker

Deputy Director: Michael A. McFaul

Institute office: Encina Hall, 616 Serra Street

Phone: (650) 723-4581

Web Site: <http://fsi.stanford.edu>

The Freeman Spogli Institute for International Studies (FSI) is Stanford University's primary forum for interdisciplinary research on contemporary international issues and challenges. Working in partnership with the seven schools at Stanford and the Hoover Institution, FSI undertakes collaborative research and teaching which transcend disciplinary, school, and national boundaries. Priority areas of research include: efforts to prevent nuclear proliferation and ensure effective responses to acts of biological or chemical terrorism; linkages among democracy, development, and the rule of law; trade-offs among energy, food security, and environmental degradation; global healthcare delivery and outcomes; political, economic, and social change in the Asia-Pacific region; and national, regional, and multilateral security concerns in the region.

Opportunities for undergraduate research include the CISAC Inter-school Honors Program in International Security and the CDDRIL Undergraduate Honors Program. The institute manages 10 undergraduate and graduate fellowship programs.

Constituent centers within FSI include: the Center on Democracy, Development, and the Rule of Law; the Center for Health Policy/Center for Primary Care and Outcomes Research; the Center for International Security and Cooperation; and the Walter H. Shorenstein Asia-Pacific Research Center.

FSI administers the following programs: the Forum on Contemporary Europe; the Program on Food Security and the Environment; the Initiative on Distance Learning; the Inter-University Center for Japanese Language Studies; the Program on Energy and Sustainable Development; the Program on Global Justice; the Stanford Center on International Conflict and Negotiation; and the Stanford Program on International and Cross-cultural Education.

For more information about particular FSI centers and programs, contact the center or program directly (area code 650):

Center on Democracy, Development, and the Rule of Law (CDDRIL)—724-7197, <http://cddrl.stanford.edu>, Michael McFaul, Director

Center for Health Policy/Center for Primary Care and Outcomes Research (CHP/PCOR)—723-1020, <http://chppcor.stanford.edu>, Alan M. Garber, Director

Center for International Security and Cooperation (CISAC)—723-

9625, <http://cisac.stanford.edu>, Scott D. Sagan, Siegfried S. Hecker, Co-Directors

Walter H. Shorenstein Asia-Pacific Research Center (Shorenstein APARC)—723-9741, <http://aparc.stanford.edu>, Gi-Wook Shin, Director
Program on Food Security and the Environment—725-6851; <http://fse.stanford.edu>, Rosamond Naylor, Director

Forum on Contemporary Europe (FCE)—723-4716, <http://fce.stanford.edu>, Amir Eshel, Director

Initiative on Distance Learning (IDL)—725-3036, <http://idl.stanford.edu>, Katherine Kuhns, Director

Inter-University Center for Japanese Language Studies (IUC)—725-1490, <http://www.stanford.edu/dept/IUC>, Steven Carter, Director

Program on Energy and Sustainable Development (PESD)—724-1714, <http://pesd.stanford.edu>, David G. Victor, Director

Program on Global Justice (PGJ)—723-0256, <http://globaljustice.stanford.edu>, Joshua Cohen, Director

Stanford Center on International Conflict and Negotiation (SCICN)—723-2574, <http://www.law.stanford.edu/program/centers/scicn>, David Holloway, Allen Weiner, Co-Directors

Stanford Program on International and Cross-cultural Education (SPICE)—723-1116, <http://spice.stanford.edu>, Gary Mukai, Director

UNDERGRADUATE PROGRAMS

INTERSCHOOL HONORS PROGRAM IN INTERNATIONAL SECURITY

Co-Directors: Scott D. Sagan and Paul Stockton

The Center for International Security and Cooperation (CISAC) coordinates a University-wide interschool honors program in international security studies. Students selected for the honors program fulfill individual department course requirements, attend a year-long seminar on international security research, intern at a security-related organization, and produce an honors thesis with policy implications. In order to qualify for the program, students must demonstrate sufficient depth and breadth of international security course work. Ideally, applicants to the program should have taken POLISCI 114S, International Security in a Changing World; MS&E 193, Technology and National Security; and at least one related course such as ECON 150/PUBLPOL 104, Economic Policy Analysis; STS 110/MS&E 197/PUBLPOL 103B, Ethics and Public Policy; SOC 160, Formal Organizations; PUBLPOL 102/SOC 166, Organizations and Public Policy; POLISCI 110B, Strategy, War, and Politics; and POLISCI 114T, Major Issues in International Conflict Management.

Information about and applications to this program may be obtained from the Center for International Security and Cooperation, E223 Encina Hall East, telephone (650) 723-9626, or <http://cisac.stanford.edu>.

COURSES

IIS 199. Interschool Honors Program in International Security Studies—Students from different schools meet in a year-long seminar to discuss, analyze, and conduct research on international security. Combines research methods, policy evaluation, oral presentation, and preparation of an honors thesis by each student. May be repeated for credit.

10-15 units, Aut, Win, Spr (Stedman)

CDDRL UNDERGRADUATE HONORS PROGRAM

The Center on Democracy, Development, and the Rule of Law (CDDRL) Honors Program provides students majoring in International Relations the opportunity to conduct an independent research project focused on issues of democracy, development, and the rule of law under CDDRL faculty guidance. Students interested in the program consult with their prospective honors advisers in their junior year and must submit their honors thesis proposal in the Spring Quarter of that year. Honors students present a formal defense of their theses in mid-May of the senior year. Prerequisites for the program are a 3.5 grade-point average, a strong overall academic record, and demonstrated skills in writing and conducting independent research.

For more information, contact the Center on Democracy, Development, and the Rule of Law, Encina Hall C100, phone (650) 724-7197; or see <http://cddrl.stanford.edu>.

COURSES

Required coursework includes INTNLREL 199, an honors research seminar that focuses on democracy, development, and the rule of law in developing countries as well as INTNLREL/POLISCI 114D, CDDRL's flagship undergraduate lecture course taught every Autumn Quarter. Honors students meet bi-weekly with faculty and their peers to present project theses and receive feedback. Students must attend honors college in September before Autumn Quarter classes begin and the weekly CDDRL seminar.

STANFORD INSTITUTE FOR THE QUANTITATIVE STUDY OF SOCIETY

Director: Norman H. Nie

Center Offices: 417 Galvez Mall, Encina Hall West, first floor

Mail Code: 94305-6048

Phone: (650) 723-7242

Web Site: <http://www.stanford.edu/group/siqss>

Founded in 1998, the Stanford Institute for the Quantitative Study of Society (SIQSS) is a multidisciplinary research institute affiliated with Stanford University's Office of Research and Graduate Policy. The Institute is devoted to producing and sponsoring high-quality empirical social science research about the nature of society and social change.

The central mission of SIQSS is to provide social knowledge for the larger society and to develop the empirical social sciences as a primary tool for understanding social reality. SIQSS seeks to fulfill this mission by undertaking large-scale, socially relevant, theoretically important, and methodologically sound social research. Examples of projects under way include unintended consequences of information and technology in society; education and its social outcomes; conducting the 2000 census under adversity; and an online scholarly journal, *IT & Society* at <http://www.stanford.edu/group/siqss/itandsociety>.

Scholars participating in SIQSS research programs and activities are drawn from diverse disciplines throughout Stanford University and from other academic institutions. SIQSS currently supports quantitative research through the following: long-term institute-initiated research programs, Stanford faculty research grants and student research assistantships, Stanford faculty fellows, interdisciplinary seminars, and the American Empirical Series.

MICHELLE R. CLAYMAN INSTITUTE FOR GENDER RESEARCH

Director: Londa Schiebinger
Associate Director: Michelle Cale
Research Director: Andrea Henderson
Program Manager: Jane Gruba-Chevalier
Artist in Residence: Valerie Miner
Art Curator: Karen M. Rapp
Research Fellows: Cynthia M. Friend, Sabine C. Girod, Myra M. Hart,
 Nancy Hopkins, Michelle Murphy, Kavita Phillip, Sue Rosser, Sheri
 D. Sheppard
Institute Office: Serra House, 589 Capistrano Way
Mail Code: 94305-8640
Phone: (650) 723-1994
Web Site: <http://gender.stanford.edu>

Formerly the Institute for Research on Women and Gender, the Clayman Institute contributes to the development of a more equal society for women and men through the creation of innovative research studies and the dissemination of key findings to decision makers in universities, business, communities, and government.

The institute focuses on women and gender issues in science, technology, engineering, and mathematics. It brings together faculty and students in interdisciplinary seminars, and organizes guest lectures and conferences open to the general public. It has three in-house research projects, due to be completed in 2008: on dual career academic couples; on women entrepreneurs; and on why mid-level women leave technology jobs in Silicon Valley. The institute also offers a number of prizes and awards to graduate students and faculty, including seven graduate dissertation fellowships, and hosts up to eight residential research fellows who contribute to the institute's research studies and broader research agenda.

STANFORD CENTER ON LONGEVITY

Director: Laura Carstensen
Deputy Director: Thomas Rando
Web Site: <http://longevity2.stanford.edu>

The aim of the Center is to use increased life expectancy to bring about profound advances in the quality of life from early childhood to old age.

The center sponsors an interdisciplinary mobility project to integrate new technologies and to institute streamlined methods of assisting Stanford faculty with the development of innovative ideas. Major disciplines represented in this project are biology, medicine, engineering, psychology, economics, urban planning, and the d.school.

SOCIAL SCIENCE HISTORY INSTITUTE

Co-Directors: David Brady, Stephen Haber
Institute Office: Building 200, Room 10
Mail Code: 94305-2024
Phone: (650) 723-1466
Email: toney@stanford.edu
Web Site: <http://sshi.stanford.edu>

The goal of Social Science History Institute (SSHI) is to re-engineer the manner in which students in social science departments learn about historical institutions and data, and the manner in which students in history and related disciplines are trained in social science methods. Historians and social scientists share many of the same substantive interests (for example, the development of economies, political systems, and social structures), but they approach them with different and complementary methods and bodies of evidence. There is, however, a great deal of potential for historians and social scientists to draw on the strengths of each other's methods to improve their own work and to foster increased interaction among the various disciplines that employ history as a laboratory to operationalize social science theories. The Social Science History Institute seeks to realize this potential by transplanting state-of-the-art research methods from classics, economics, history, political science, and sociology across the boundaries of each discipline. Toward this end, SSHI offers conferences and research support for faculty and graduate students.

STANFORD LINEAR ACCELERATOR CENTER

Director: Jonathan Dorfan
Web Site: <http://www.slac.stanford.edu>

The Stanford Linear Accelerator Center (SLAC) has two academic departments. The Particle and Particle Astrophysics Department includes several areas of research: theoretical and experimental elementary particle physics, particle astrophysics, cosmology, accelerator and beam physics, and detector instrumentation. The Photon Science Department includes all areas of science done at the Stanford Synchrotron Radiation Laboratory (SSRL), the Photon Ultrafast Laser Science and Engineering Center (PULSE), and Linac Coherent Light Source, currently under construction to become a state-of-the-art X-ray laser research facility.

SLAC is located on 425 acres of Stanford property west of the main campus and is operated under a contract with the United States Department of Energy. SLAC is operated by Stanford as a national facility allowing qualified scientists from Stanford and other universities and research centers worldwide to participate in the research programs. Graduate students at Stanford may carry out Ph.D. research with members of the SLAC faculty; graduate students from other universities also participate in the research programs of visiting groups.

Research assistantships are available for qualified Stanford students by arrangement with individual faculty members. There are also opportunities for summer employment in the research groups at the center. Students interested in research in the areas of high energy physics, particle astrophysics, and accelerator physics should first contact Professor Rafe H. Schindler at the SLAC Graduate Studies Office. Students interested in research opportunities in photon science and SPEAR 3 should contact a member of the SSRL faculty, or other members of the Stanford faculty who use SSRL in their research programs; see <http://www.ssrl.slac.stanford.edu/faculty>.

KAVLI INSTITUTE FOR PARTICLE ASTROPHYSICS AND COSMOLOGY (KIPAC)

Director: Roger Blandford

Web Site: <http://www-group.slac.stanford.edu/kipac>

KIPAC is an independent laboratory funded in part by Stanford University and the Department of Energy. KIPAC was founded to explore new fronts and challenges in particle astrophysics and cosmology, including the study of the very large and the study of the very small as a source of fundamental questions.

PHOTON ULTRAFAST LASER SCIENCE AND ENGINEERING (PULSE)

Director: Phil Bucksbaum

Web Site: <http://photonscience.slac.stanford.edu/pulse/index.php>

PULSE (Photon Ultrafast Laser Science and Engineering) is based on the construction of the world's first x-ray free electron laser. The construction of this new x-ray source, called the Linac Coherent Light Source (LCLS), is funded by the Department of Energy, and its operation is planned to begin toward the end of calendar 2008. LCLS will provide x-ray beams of unprecedented brightness, delivered in femtosecond pulses with full transverse coherence.

PULSE builds on, and leverages existing strengths in, atomic physics, chemistry, biology, and condensed matter physics. The center plans to focus on ultrafast structural and electronic dynamics in materials science, the generation of attosecond laser pulses, single molecule imaging, and the origin of efficient light harvesting and solar energy conversion in molecular systems during the first three years of operation.

STANFORD SYNCHROTRON RADIATION LABORATORY (SSRL)

Director: Joachim Stöhr

Web Site: <http://www-ssrl.slac.stanford.edu>

SSRL, a division of the Stanford Linear Accelerator Center, is a National User Facility which provides synchrotron radiation, a name given to x-rays or light produced by electrons circulating in a storage ring at nearly the speed of light. These extremely bright x-rays can be used to investigate forms of matter ranging from objects of atomic and molecular size to man-made materials with unusual properties. The obtained information and knowledge is of great value to society, with impact in areas such as the environment, future technologies, health, and national security. Many of SSRL's 22 faculty hold joint appointments with campus departments.

SSRL has research programs in materials science, chemistry, structural biology, and ultrafast science, as well as accelerator physics and development of advanced sources of synchrotron radiation, especially ultra short pulse, x-ray free electron lasers. The lab is interdisciplinary with graduate students pursuing degrees from Stanford campus departments that include Applied Physics, Chemical Engineering, Chemistry, Earth Sciences, Electrical Engineering, Materials Science and Engineering, Physics, and Structural Biology.

Students interested in working at the facility should contact a member of the SSRL faculty, one of the assistant directors, or other members of the Stanford faculty who use SSRL in their research programs; see <http://www-ssrl.slac.stanford.edu/faculty>.

X-RAY LABORATORY FOR ADVANCED MATERIALS (XLAM)

Director: Z-X Shen

Web Site: <http://photonscience.slac.stanford.edu/xlam/index.php>

XLAM, a research unit within the Photon Science Directorate at SLAC, addresses key challenges associated with the Department of Energy's mission in the areas of condensed matter physics and materials science, providing scientific leadership in using and developing photon science devices and detectors and other SLAC facilities. XLAM also provides theoretical leadership and support for photon/materials-based experiments at SLAC. The emphasis of this core group is in scattering, spectroscopy, and imaging using the Stanford Synchrotron Radiation Laboratory (SSRL) and the Linac Coherent Light Source (LCLS).

The SLAC-based core capabilities include x-ray scattering, x-ray absorption and emission spectroscopy, angle-resolved photoemission, time-resolved scattering and spectroscopy, and spectro-microscopy. The emphasis has been the unique photon source at SLAC and its related spectroscopy and scattering expertise; there are plans for a strong computational component of this core to support the interpretation of experimental data. The SLAC photon based experimental techniques have been applied to strongly correlated materials, magnetic materials, low-dimensional materials, molecular solids, materials made of nano-clusters, surfaces and interfaces, and catalysis. XLAM programs plan to extend this effort to include matters under extreme conditions, such as high magnetic field and high pressure.

XLAM serves as a link between SLAC and the intellectual resources in other Stanford schools such as the Geballe Laboratory for Advanced Materials (GLAM). XLAM serves to couple SLAC and the Stanford campus by engaging the larger Stanford community to participate in DOE's basic energy science research enterprise. XLAM programs co-located with GLAM in the McCullough Building include materials synthesis, local probe microscopy, condensed matter theory, and organic/inorganic interfaces.

WOODS INSTITUTE FOR THE ENVIRONMENT

Directors: Jeffrey R. Koseff, Barton H. Thompson, Jr.

Institute Office: Encina Modular C, 429 Arguello Way

Mail Code: 94305-6030

Phone: (650) 725-5778

Web Site: <http://environment.stanford.edu>

The Ward W. and Priscilla B. Woods Institute for the Environment serves as a catalyst and hub for interdisciplinary research, teaching, and problem solving. It draws on the experience and expertise of faculty, students, and staff from all seven Stanford schools, and other institutes, centers, and independent labs. The institute's mission is to promote environmental sustainability, and to help societies learn to meet their resource demands without undermining the ability of the planet to provide for future generations. The Woods Institute is at the core of the campus-wide Initiative on the Environment and Sustainability which leverages Stanford's historic strengths in research, teaching, outreach, and technology transfer, and carries out its mission by seeking solutions to major challenges through innovative research, educating and training environmental leaders, and moving ideas into action by collaborating directly with decision makers. The institute also encourages innovation by funding collaborative faculty research and student projects. The Woods Institute currently concentrates its work in four focus areas: energy and global climate systems; freshwater; land use and conservation; and oceans and estuaries.

UNDERGRADUATE PROGRAMS

GOLDMAN INTERSCHOOL HONORS PROGRAM IN ENVIRONMENTAL SCIENCE, TECHNOLOGY, AND POLICY

The Woods Institute for the Environment coordinates a University-wide interschool honors program in environmental science, technology, and policy. Undergraduates planning to participate in the honors program are required to pursue studies in environmental sciences, technology, and policy, with a concentration in a single discipline. After completion of the prerequisite units, students join small group honors seminars to work with faculty members in the environmental field on an honors thesis that incorporates both scientific principles and policy aspects of environmental issues.

Courses in environmental studies appear under the course listings of the schools of Earth Sciences, Engineering, and Humanities and Sciences. Information about and applications to this program may be obtained by phoning (650) 723-5697.

COURSES

WOODS 195. Interschool Honors Program in Environmental Science, Technology, and Policy—Students from the schools of Humanities and Sciences, Engineering, and Earth Sciences analyze important problems in a year-long small group seminar. Combines research methods, oral presentations, preparation of an honors thesis by each student, and where relevant, field study. May be repeated for credit.

1-9 units, Aut, Win, Spr (Naylor, R; Falcon, W; Vitousek, P; Freyberg, D)

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