

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

*Vice Provost and Dean of Research and Graduate Policy and Dean of the Independent Laboratories, Centers, and Institutes:* Arthur Bienenstock

*Associate Dean of Research:* Ann M. Arvin

*Associate Dean of Graduate Policy:* Gail Mahood

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 and Graduate Policy:

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

Stanford Institute for the Environment

Stanford Center for Innovations in Learning

Stanford Institute for International Studies

Kavli Institute for Particle Astrophysics and Cosmology

Center for the Study of Language and Information

Stanford Program for Bioengineering, Biomedicine, and Biosciences (BioX)

Stanford Institute for the Quantitative Study of Society

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.

## 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 departments 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).

## STANFORD 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 Stanford Institute for the Environment helps societies around the world learn how to meet the demands of their populations for energy, food, water, and other vital needs while protecting the ability of the planet to meet the needs of people today and in the future. SIE brings together faculty, staff, and students from the seven schools and other institutes and centers at Stanford to conduct interdisciplinary research, education, and outreach to promote an environmentally sound and sustainable world. Through its work at the intersection of science, technology, and policy, and health, business, and the humanities, SIE fosters creative, working solutions to environmental challenges; works with public and private leaders to ensure the implementation of these solutions; trains and educates the next generation of environmental leaders and problem solvers; and engages the broader community to increase public understanding of environmental problems and solutions. The Institute currently concentrates its work in four focus areas: energy and global climate systems; freshwater; land use and conservation; and oceans and estuaries.

## GEBALLE LABORATORY FOR ADVANCED MATERIALS

*Director:* Malcolm R. Beasley

*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 a number of 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, optoelectronic 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 provides advanced materials characterization and synthesis facilities for its members as well as for the Stanford materials research community at large. They include a focused ion beam (FIB), scanning electron microscopy (SEM), scanning probe microscopy (SPM), transmission electron microscopy (TEM), x-ray diffraction analysis (XRD), and x-ray photoelectron spectroscopy (XPS) for characterization and thin film deposition capabilities for synthesis of materials. These facilities are managed by professional staffs who also conduct research and development of new tools and techniques in areas related to advanced materials synthesis and characterization.

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

## EDWARD L. GINZTON LABORATORY

*Director:* David A. B. Miller

*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:* Robert L. Byer

*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 focusing on interrelationships of U.S. political and legal institutions and economic activity, often referred to as political economy.

Democracy and Free Markets focusing on political economy in countries around the world.

International Rivalries and Global Cooperation focusing on interrelationships among countries, 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.

## STANFORD HUMANITIES CENTER

*Director:* John Bender

*Associate Director:* Elizabeth S. Wahl

*External Faculty Fellows:* Carlo Caballero (Music, University of Colorado), Johannes Fabian (Anthropology, University of Amsterdam), Sabine Frühstück (East Asian Languages and Cultural Studies, University of California, Santa Barbara), Steven Justice (English, University of California, Berkeley), Wendy Larson (East Asian Languages, University of Oregon), Jennifer Roberts (Art History, Harvard University), Robert Royalty (Philosophy and Religion, Wabash College), Steven Yao (English, Hamilton College)

*Associate Fellow:* Judith Lichtenberg (Philosophy, University of Maryland)

*Humanities and International Studies Fellows:* Marines Fornerino (Political Science, Universidad del Zulia, Venezuela), Alla Kassianova (International Relations, Tomsk State University, Russia)

*Internal Faculty Fellows:* Keith Michael Baker (History), David Holloway (History), Yoshiko Matsumoto (Asian Languages), Purnima Mankekar (Cultural and Social Anthropology), Robert Polhemus (English), Bryan Wolf (Art and Art History), Arnold Zwicky (Linguistics)

*Geballe Dissertation Graduate Student Fellows:* Ashwini Deo (Linguistics), Marcus Folch (Classics), Joann Kleinneir (English), Ya Chen Maya Ma (Art and Art History), Jehangir Malegam (History), Christen Smith (Cultural and Social Anthropology), Blake Stevens (Music), Roberta Strippoli (Asian Languages)

*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 sponsored by the Mellon Foundation 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. Courses given by fellows in 2005-06 follow.

## COURSES

### ENGLISH

#### ENGLISH 300. *The Pearl Poet*

5 units, Win (*Justice*)

### LINGUISTICS

#### LINGUIST 218. *Seminar in Morphosyntax: A Cabinet of Curiosities*

2-4 units, Aut (*Zwicky*)

## STANFORD CENTER FOR INNOVATIONS IN LEARNING

*Directors:* Stig Hagstrom, Roy Pea

*Executive Director:* Sam Steinhardt

*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.

Established in 2002, SCIL is housed in the renovated 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 provides an environment for conducting research and testing applications at the intersection of learning sciences, design, and technology. SCIL researchers focus on issues in learning and teaching, and on the ways in which innovative uses of technology can address those issues. Research projects typically involve collaboration among faculty, senior staff members, students from multiple disciplines, and scholars from other institutions and countries.

SCIL programs are multidisciplinary and collaborative in nature and include the recently launched LIFE Center (Learning in Informal and Formal Environments), a research endeavor funded by the National Science Foundation in 2004. Researchers in the LIFE Center 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.

Media X, the industry-affiliates program that SCIL jointly sponsors with the Center for the Study of Language and Information (CSLI), brings together University faculty conducting interactive technology research with organizations committed to technical advancement and innovation.

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

## CENTER FOR THE INTERDISCIPLINARY STUDY OF SCIENCE AND TECHNOLOGY

*Center Director:* Michael Friedman, Robert McGinn

*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, and the sciences and engineering.

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.

CISST also publishes a selection of undergraduate research papers in STS in our electronic undergraduate journal, *Techne* (<http://www.stanford.edu/group/STS/techne>).

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.

## STANFORD INSTITUTE FOR INTERNATIONAL STUDIES (SIIS)

*Director:* Coit Blacker

*Web Site:* <http://siis.stanford.edu>

The Stanford Institute for International Studies promotes individual and collaborative research on contemporary, policy-relevant issues that are international and interschool in character. Working in partnership

with the seven schools at Stanford (Business, Earth Sciences, Education, Engineering, Humanities and Sciences, Law, and Medicine) and with the Hoover Institution, SIIS fosters excellence in research and teaching across disciplinary, school, and national boundaries. The priority areas of research are in the fields of international and regional peace and security; economic development and political change in East and Southeast Asia; the global environment challenge; and the delivery of health care in a comparative perspective.

Opportunities for undergraduate research include the Goldman Interschool Honors Program in Environmental Science, Technology, and Policy, and the CISAC Interschool Honors Program in International Security. The institute manages 10 undergraduate and graduate fellowship programs.

The constituent centers and programs within SIIS include the Asia-Pacific Research Center, the Center on Democracy, Development and the Rule of Law, the Center for Environmental Science and Policy, the Center for Health Policy, the Center for International Security and Cooperation, the European Forum, and the Stanford Japan Center—Research.

In the areas of public service and outreach, SIIS administers the Stanford Program on International and Cross-Cultural Education (SPICE), which develops internationally-oriented curricula for use by public school teachers.

The SIIS central office is located at 100 Encina Hall, telephone (650) 723-4581. For more information about particular SIIS programs, contact the programs directly (area code 650):

Asia/Pacific Research Center (A/PARC), 723-9741, <http://aparc.stanford.edu/>, Gi-Wook Shin, *Director*

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

Center for Environmental Science and Policy (CESP), 725-2606, <http://cesp.stanford.edu/>, Walter P. Falcon, Stephen Schneider, *Co-Directors*

Center for Health Policy (CHP), 723-1020, <http://chppcor.stanford.edu/>, Alan M. Garber, M.D., *Director*

Center for International Security and Cooperation (CISAC), 723-9625, <http://cisac.stanford.edu/>, Scott Sagan, *Director*

European Forum, 723-4716, <http://ef.stanford.edu/>, Amir Eshel, *Director*

Inter-University Center for Japanese Language Studies, <http://www.stanford.edu/dept/IUC/>, 725-1490

Stanford Program on International and Cross-Cultural Education (SPICE), <http://spice.stanford.edu/>, 723-1116

Stanford Japan Center—Research (Japan), 011 75-752-7073, extension 40, <http://kcjs.stanford.edu/know/japancenter.html>.

## UNDERGRADUATE PROGRAMS

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

The Center for Environmental Science and Policy (CESP) 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 specific faculty members in the environmental field on an honors thesis that incorporates both scientific principles and the policy aspects of selected 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 from CESP, E401 Encina Hall East; telephone (650) 723-5697.

#### COURSES

**IIS 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, Falcon, Vitousek, Freyberg)*

### INTERSCHOOL HONORS PROGRAM IN INTERNATIONAL SECURITY

The Center for International Security and Cooperation (CISAC) coordinates a University-wide interschool honors program in international security. Students selected for the honors program fulfill individual department course requirements, attend a year-long seminar on international security research, 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, POLISCI 110B, Strategy, War, and Politics, 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, 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, E201 Encina Hall East, telephone (650) 723-0126.

#### COURSES

**IIS 199. Interschool Honors Program in International Security**—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.

*9-15 units, Aut, Win, Spr (Sagan, Cuellar, Kapur)*

## CENTER FOR THE STUDY OF LANGUAGE AND INFORMATION (CSLI)

*Director:* Byron Reeves

*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 are at the cutting edge of the information revolution. They 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. Our industry research partners and sponsors have a broad and facilitated 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 different degree programs across campus.

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

## STANFORD INSTITUTE FOR THE QUANTITATIVE STUDY OF SOCIETY (SIQSS)

*Director:* Norman H. Nie

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

*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.

## INSTITUTE FOR RESEARCH ON WOMEN AND GENDER

*Director:* Londa Schiebinger

*Web Site:* <http://http://irwg.stanford.edu>

Founded in 1974, the Institute for Research on Women and Gender is the nation's oldest organization devoted to research on gender issues across the disciplines. Working with the media, policy makers, and university administrations, the Institute also serves as a conduit to put research into action. The Institute sponsors faculty research, interdisciplinary research seminars, and conferences that examine gender issues in all fields of study, with an emphasis in the next several years on women and gender in science and engineering.

## SOCIAL SCIENCE HISTORY INSTITUTE (SSHI)

*Director:* Stephen Haber

*Institute Office:* 450 Serra Mall, Room 19

*Web Site:* <http://sshi.stanford.edu>

The goal of Social Science History Institute 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 (SLAC)

*Director:* Jonathan Dorfan

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

The Stanford Linear Accelerator Center is devoted to two major areas of research: theoretical and experimental elementary particle physics, particle astrophysics, cosmology, accelerator and beam physics, and detector instrumentation; and photon science based on the use of SPEAR3, an electron storage ring which produces intense beams of synchrotron radiation in the vacuum ultraviolet and x-ray wavelengths for research in biology, chemistry, material science, environmental science, medical science, and many areas of applied physics.

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. A major new initiative, the Kavli Institute for Particle Astrophysics and Cosmology, is located on the SLAC campus. The Linac Coherent Light Source (LCLS), a state-of-the-art instrument for research in the photon sciences, and the Ultrafast Science Center are currently under construction on the SLAC campus.

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

# STANFORD SYNCHROTRON RADIATION LABORATORY (SSRL)

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*Director:* Keith O. Hodgson

*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 its 20 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 actively 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/>.