

STANFORD
UNIVERSITY



STANFORD LINEAR ACCELERATOR CENTER

National Science Foundation
Advisory Panel on Light Source Facilities
Visit to Stanford Linear Accelerator Center
Friday, March 21, 2008

Thursday 20 March 2008

7:00p **Dinner and Executive Session:** NSF Committee Only (Restaurant to be determined)

Friday 21 March 2008 **Location: Bldg 48 (ROB) Redwood Rooms A/B**

8:00a **Welcome and SLAC Overview** [SLAC Dir P. Drell](#)
8:20a **SSRL Overview, Lessons Learned**..... [SSRL Dir J. Stohr](#)
8:40a **LCLS Overview, Lessons Learned**.....[LCLS Dir J. Galayda, Paul Emma](#)
9:00a **PPA Accelerator R&D Overview**....[Particle Physics and Astrophysics Dir S. Kahn, T. Raubenheimer](#)
9:20a **Discussion**

9:45a *Break*

10:00a -11:00 **Tour of SSRL**..... J. Andrews, J. Safranek, U. Bergmann, S. George

11:00a -12:00 **Tour of SLAC linac, LCLS injector, NLCTA, ESA** J. Seeman, T. Raubenheimer

12:00 noon **Working lunch with faculty** recruited/drawn to the university because of the facility.
A. Brunger, P. Bucksbaum, T. Devereaux, K. Gaffney, A. Lindenberg, W. Mao, A. Nilsson

1:30p – 2:30 **Project Management at SLAC**.....L. Klaisner, M. Reichanadter, K. Hodgson, J. Galayda, J. Stohr

2:30p – 3:30 **Informal discussion with students and postdocs** about their learning experiences at the facility.
D. Bernstein, M. Bibee, P. Hillyard, S. Kaya, C. Limborg, R. Moore, D. Ratner, I. Vishik, I. Waluyo,
H. Wen, D. Zhu

3:30p *Break*

3:45p **Meeting with Stanford Provost John Etchemendy and Stanford VP for SLAC William Madia**

4:15p **Executive Session**

5:30p **Adjourn**

Background Information on Participants

Welcome and SLAC Overview

Persis Drell (persis@slac.stanford.edu)

Director, SLAC. In 2001, Drell was named deputy director of Cornell's Laboratory of Nuclear Studies. In 2002, Dr. Drell accepted a position as Professor and Director of Research at SLAC. Her current research activities are in particle astrophysics. She has recently been working with the GLAST project as Deputy Project Manager.

SSRL Overview, Lessons Learned

Joachim (Jo) Stohr (stohr@slac.stanford.edu)

Director, SSRL. PS Faculty. Recent work emphasizes the study of magnetic materials and phenomena, especially the use of polarization dependent spectroscopy and the development of x-ray magnetic imaging techniques for the study of the ultrafast magnetic nanoworld. Development of novel experimental soft x-ray synchrotron radiation techniques.

LCLS Overview, Lessons Learned

John Galayda (galayda@slac.stanford.edu)

Director and Manager, LCLS. PS, PPA Faculty. Manipulation and control of electron beams using laser light, the characteristics of synchrotron radiation from an FEL and beam-based feedback stabilization systems. The last topic is relevant to light sources based on storage rings and energy recover linacs as well as to FELs.

Paul Emma (emma@slac.stanford.edu)

Engineering Physicist. LCLS. Responsible for the LCLS accelerator commissioning.

PPA Accelerator R&D Overview

Steve Kahn (skahn@slac.stanford.edu)

Director, Particle Physics and Astrophysics. PPA Faculty. Engaged in a diverse program of research in high energy astrophysics, including experimental, observational, and theoretical components. Research interests include work in high resolution X-ray spectroscopy, and experimental cosmology.

Tor Raubenheimer (tor@slac.stanford.edu)

Accelerator Research. PPA Faculty. Accelerator physics; design issues in next generation linear colliders; participation in SLC operation; ion/beam-plasma instabilities in rings and linacs; effects during bunch length compression.

Tour of SSRL

Joy Andrews (jandrews@slac.stanford.edu)

Staff Scientist, Chem and Mat Sci, SSRL. Studies heavy metals in the environment using a variety of x-ray methods. Her particular interests are in the speciation of mercury as it transforms through the food web, and in phytoremediation (uptake by plants) to remediate metal contamination.

Uwe Bergmann (bergmann@slac.stanford.edu)

Team Leader, Hard X-ray Group, Chem and Mat Sci, SSRL. Development and application of novel synchrotron based hard x-ray spectroscopic techniques, applications of x-ray spectroscopy, applications for x-ray fluorescence imaging.

Serena George (serena@slac.stanford.edu)

Staff Scientist, Structural Molecular Biology, SSRL. Research focuses on the development and application of synchrotron-based spectroscopies (including XAS, XES and NRVS) as probes of the electronic structure of bioinorganic and organometallic systems.

James Safranek (safra nek@slac.stanford.edu)

Accelerator Physicist, Accelerator and FEL Physics, SSRL.

Tour of SLAC Linac

John Seeman (seeman@slac.stanford.edu)

Assistant Director of the PPA/LCLS directorates and Head of the Accelerator Systems Division, leads a group that operates and upgrades the SLAC "two-mile" linac, the PEP-II collider, and recently the LCLS injector.

Tor Raubenheimer (tor@slac.stanford.edu)

Accelerator Research. PPA Faculty. Accelerator physics; design issues in next generation linear colliders; participation in SLC operation; ion/beam-plasma instabilities in rings and linacs; effects during bunch length compression.

Project Management at SLAC

John Galayda (galayda@slac.stanford.edu)

Director and Manager, LCLS. Joint Faculty: PS and PPA. Manipulation and control of electron beams using laser light, the characteristics of synchrotron radiation from an FEL and beam-based feedback stabilization systems. The last topic is relevant to light sources based on storage rings and energy recover linacs as well as to FELs.

Keith Hodgson (hodgson@ssrl.slac.stanford.edu)

Director, Photon Science. Faculty: PS. Inorganic, Biophysical and Structural Chemistry: The use of x-ray absorption spectroscopy (XAS) to investigate the electronic and structural environment of specific metal constituents in non-crystalline macromolecular systems. The use of high-intensity synchrotron radiation for diffraction studies of proteins and phasing by anomalous scattering methods.

Lowell Klaisner (klaisner@slac.stanford.edu)

Director, Engineering and Technical Support. Has managed a number of scientific instrument projects including; Project Manager for the Polarized Electron Gun, Chief Engineer for the B Factory, and Project Manager for the Gamma Ray Large Area Telescope. Currently, he is the Associate Laboratory Director for Engineering and Technical Support.

Mark Reichanadter (reich@slac.stanford.edu)

Deputy Director, LCLS. Accelerator engineering and project management. Accelerator engineering: design and construction of accelerator-based facilities, FELs, synchrotrons, FELs and related detectors. Project Management: management and organization of project teams to design, procure, construct and commission science/research facilities.

Joachim (Jo) Stohr (stohr@slac.stanford.edu)

Director, SSRL. Faculty, PS. Recent work emphasizes the study of magnetic materials and phenomena, especially the use of polarization dependent spectroscopy and the development of x-ray magnetic imaging techniques for the study of the ultrafast magnetic nanoworld. Development of novel experimental soft x-ray synchrotron radiation techniques.

Faculty Working lunch

Axel Brunger (Brunger@stanford.edu)

Mol and Cell Phys., Neurology and Neurological Sciences, PS Faculty. Structural neurobiology, vesicle trafficking and membrane fusion. Structure determination by X-ray crystallography and NMR spectroscopy. Computer simulation of macromolecules

Phil Bucksbaum (phb@slac.stanford.edu)

Director, PULSE (Photon Science/SLAC). Chair, PS Faculty. Non-linear optics, precision measurements, high-intensity physics, ultrafast laser physics.

Tom Devereaux (tpd@slac.stanford.edu)

XLAM (Photon Science/SLAC). PS Faculty. Development of numerical methods and theories of photon-based spectroscopies of strongly correlated materials.

Kelly Gaffney (kgaffney@slac.stanford.edu)

PULSE (Photon Science/SLAC). PS Faculty. Using femtosecond x-ray pulses to study structural dynamics in condensed matter, with emphasis on chemical dynamics in biology and chemistry. This will involve the merger of linear accelerator generated x-rays with ultrafast optical lasers and the development of time resolved x-ray diffraction, scattering, and spectroscopy.

Aaron Lindenberg (aaronl@slac.stanford.edu)

Dep. Dir. PULSE (Photon Science/SLAC). PS, Mat Sci&Engr Faculty. Atomic-scale ultrafast dynamics, phase transitions, liquid-state dynamics, materials under extreme conditions, THz spectroscopy, time-resolved x-ray techniques.

Wendy Mao (wmao@stanford.edu)

Earth Sciences, PS Faculty. High-Pressure Geophysics, Geochemistry, and Petrology; Volatiles in Planetary Systems and Hydrogen Storage Applications; Experimental Mineral Physics.

Anders Nilsson (nilsson@slac.stanford.edu)

Dep. Dir. XLAM (Photon Science/SLAC). PS Faculty. X-ray and electron spectroscopies applied to surfaces and interfaces, chemical bonding and reactions on surfaces, hydrogen bonding in water and organic systems, Aqueous solutions and interfaces, Heterogenous- and biomimetic enzyme catalysis.

Students/Postdocs Meeting

David Bernstein (dpb@slac.stanford.edu)

Matt Bibee (mbibee@SLAC.Stanford.EDU)

Graduate student in Applied Physics. Research consists of using synchrotron x-ray diffraction and related techniques to study strain in multi-layered silicon materials.

Pat Hillyard (phillyar@stanford.edu)

Graduate Student. Department of Chemistry. Research interests lie in observing structural dynamics and electronic changes in chemical systems with time-resolved XAS techniques.

Sarp Kaya (sarpkaya@stanford.edu)

Postdoc. Interaction of water with solid surfaces.

Cecile Limborg (Limborg@slac.stanford.edu)

LCLS Injector Liaison Manager. Design and characterization of RF photo-injectors used as high brightness sources for single-pass Free Electron Lasers.

Rob Moore (rgmoore@slac.stanford.edu)

Postdoc research associate at SSRL. Research focus is angle resolved photoemission studies on correlated electron systems. Currently studying charge density wave systems and organic superconductors.

Daniel Ratner (dratner@slac.stanford.edu)

Graduate student. Worked on several different X-ray FEL topics, including space charge effects, micro-bunching instabilities and eSASE, and I am assisting with the LCLS commissioning.

Inna Vishik (ivishik@slac.stanford.edu)

Graduate student. Using angle resolved photoemission spectroscopy to study the mysterious pseudogap state of the high-temperature superconducting cuprates, which exists at temperatures above the superconducting transition temperature over a wide doping range.

Ira Waluyo (iwaluyo@slac.stanford.edu)

Graduate student.

Haiden Wen (hwen@slac.stanford.edu)

Research Associate, PULSE/SLAC.

Diling Zhu (dlzhu@slac.stanford.edu)

Graduate student. Research focuses on microscopy and the study of fast dynamics of materials using coherent x-ray sources.

Stanford University Administrators

John Etchemendy (etch@stanford.edu) (<http://www.stanford.edu/dept/provost/biography/>)

Provost, Stanford University. Provost since 2000, Etchemendy has been a faculty member in the Department of Philosophy since 1983 after receiving his doctorate at Stanford in 1982. He is also a faculty member of the Symbolic Systems Program and a senior researcher at the Center for the Study of Language and Information.

Bill Madia (madia@slac.stanford.edu) (<http://home.slac.stanford.edu/pressreleases/2008/20080122.htm>)

Stanford Vice-President for SLAC, Stanford University. Provides direct linkage between the university and the laboratory, enhance collaboration and ensure coordination between the laboratory, Stanford and the Department of Energy (DOE).

Directions to SLAC

- 1 From Hwy 101, take the Oregon Expressway Exit, travel approx. 3 miles, turn right on Foothill Expressway. Merge right onto Alpine Road, then left on Sand Hill Road.
- 2 Turn left at SLAC (2575 Sand Hill Road) Entrance, turn left after the Guard Gate
- 3 Continue on Loop Road to SLAC Guest House Parking (on the left)

- 1 From Hwy 280, take the Sand Hill Road East/Stanford University Exit
- 2 Turn right at SLAC (2575 Sand Hill Road) Entrance, turn left after the Guard Gate
- 3 Continue on Loop Road to SLAC Guest House Parking (on the left)

