

Joint Photon Sciences Institute

An Intellectual Gateway for National Synchrotron Light Source II Users

Purpose:

To capitalize on the extraordinary capabilities of the National Synchrotron Light Source II by fostering the development of new scientific initiatives and enabling technologies and strong training, education, and outreach programs

Sponsor:

U.S. Department of Energy, New York State, National Institutes of Health, U.S. Department of Defense

Funding:

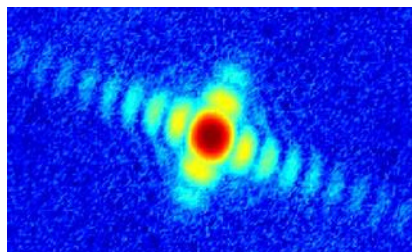
\$30 million to design and build

Users:

Synchrotron researchers from the northeastern U.S. and from around the world

A new initiative in photon sciences will capitalize on the unique capabilities of Brookhaven's proposed National Synchrotron Light Source II (NSLS-II) through a Department of Energy/New York State partnership. The Joint

Photon Sciences Institute (JPSI) will serve as an intellectual center for development and application of the photon sciences and as a gateway for users of NSLS-II, which would be the brightest synchrotron light source in the world. NSLS-II is expected to enable advances in fields including materials design and function, energy, and health/drug design. JPSI will enhance scientific programs that rely on the machine's powerful photon beams by cultivating and fostering collaborative, interdisciplinary R&D.



JPSI users will develop new instruments and techniques to enable new science at the NSLS-II

capabilities of NSLS-II, which will enable the study of materials properties and functions at the nanoscale with an unprecedented level of detail and precision. JPSI will engage the nation's scientific community to identify new scientific avenues

made available by these unique capabilities, as well as to develop new experimental techniques and technologies.

A Unique Partnership

New York State has committed to providing \$30 million for the JPSI building, which will be located next to NSLS-II and provide office space, meeting areas, and specialized, state-of-the-art laboratories. The operating expenses of the institute and its research programs will be covered by federal funding from DOE, the National Institutes of Health, the Department of Defense, and others.

Teaching the Next Generation

JPSI will help educate and train the next generation of leaders in synchrotron research. Junior and senior fellowship programs and sabbatical programs will draw the best photon scientists from institutions all over the world for interactions with the resident staff and user communities. An important element of the institute's mission will be training new researchers and enabling established researchers to embark on new directions in interdisciplinary research. JPSI will also host interdisciplinary workshops that highlight new opportunities, foster new collaborations, and promote JPSI initiatives in emerging areas of photon science and technology. Along with Brookhaven's new Center for Functional Nanomaterials, JPSI and NSLS-II will help drive a potent economic engine for New York State, the Northeast region, and the U.S. as a whole.

The Power of Photons

During the past few decades, the importance of photon sources has increased dramatically, and they are now a valuable tool for a broad spectrum of research in materials science, condensed matter physics, chemistry, biological systems, environmental research, medical imaging, and biomedical research, and are widely used in the microelectronics, chemical, and pharmaceutical industries. Modern research in most areas of photon science increasingly requires interdisciplinary work that either spans multiple conventional scientific disciplines or falls at the boundaries between them. JPSI will be an interdisciplinary institute devoted to basic research in areas of the physical sciences, engineering, and the life sciences that are united in employing synchrotron-based methods.

JPSI will also develop new methods and applications that exploit the unique