

LIGHTING THE WAY TO A BETTER TOMORROW

Frontier science serving the national interest and positively impacting nearly every aspect of our lives



The APS enables research in nearly every scientific discipline:

- Materials science
- Chemical science
- Environmental, geological, and planetary science
- Physics
- Polymer science
- Biological and life science
- Pharmaceutical research
- Nanoscale research

The U.S. Department of Energy Office of Science's (DOE SC's) Advanced Photon Source (APS) gives scientists access to high-energy, high-brightness, highly penetrating X-ray beams that are ideal for studying the arrangements of molecules and atoms, probing the interfaces where materials meet, determining the interdependent form and function of biological proteins, and watching chemical processes that happen on the nanoscale.

This remarkable scientific tool helps researchers illuminate answers to the challenges of our world, from developing new forms of energy to sustaining U.S. technological and economic competitiveness to fighting disease. The DOE invests in world-leading research centers such as the APS because of the positive global impacts from the science carried out here.

Thousands of researchers from universities, industries, and research labs around the world come to the APS. Many institutions and companies invest in APS X-ray beamlines. The APS houses technologies comprising one of the most complex machines in the

world, the result of innovative research and development led by scientists, engineers, and technicians from Argonne, other institutions, and industry.

APS UPGRADE

The upgraded APS will significantly increase in X-ray brightness and coherent flux, combining a state-of-the-art accelerator with advanced beamline, optics, and detector technologies.

The upgraded APS will give researchers a next-generation tool to probe structure and function across length, time, and energy scales, extending the U.S. global leadership in hard X-ray science for decades to come.

NOBEL PRIZE-WINNING RESEARCH

The recipients of the 2009 Nobel Prize in Chemistry published papers on their work based on data collected at DOE X-ray light sources: the APS, the National Synchrotron Light Source (Brookhaven National Laboratory), and the Advanced Light Source (Lawrence Berkeley National Laboratory). The 2012 Nobel Prize in Chemistry was awarded for discoveries based, in large part, on research at the APS.

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