

# THE ADVANCED PHOTON SOURCE UPGRADE PROJECT

*Building the Next-Generation X-ray Light Source*



- Around 5,500 researchers use the APS every year.
- The APS drives U.S. scientific and technological global competitiveness.
- Two Nobel Prizes have been awarded for research done at the APS.
- The APS Upgrade will keep the U.S. at the forefront of X-ray science.

The Advanced Photon Source at Argonne National Laboratory is one of the most productive scientific facilities in the United States.

The U.S. Department of Energy Office of Science's Advanced Photon Source (APS) Upgrade Project is transforming this high-energy, storage-ring-based, X-ray light source to equip scientists with a vastly more powerful tool for investigating and improving the physical and biological materials and chemical processes that profoundly impact our lives.

## MAINTAINING U.S. LEADERSHIP

This upgraded X-ray light source will make it possible to see changes at the molecular level that occur:

- Before a steel girder starts to crack
- Before a healthy brain succumbs to Alzheimer's
- Before an electric car's battery begins to fail

By peering into this world, we will enable scientific discoveries to benefit human life and advance U.S. technology and business.

The upgraded APS will expand our ability to understand and manipulate matter at the nanoscale. With this versatile scientific tool, researchers will be able to observe individual atoms moving and interacting—in real time—deep inside real samples, biological organisms, and complex engineered systems.

Once the APS upgrade project is delivered, the APS will be at the cutting edge of technology for X-ray science. This will transform the way we use X-rays for research, and it will shape our future as a nation, discovering new materials that will impact everyone's life for decades to come.

## HISTORY OF TRANSFORMATIONAL DISCOVERY MADE IN THE U.S.A.

In 1990, the United States invested \$500 million in building the Advanced Photon Source, which has been an immensely productive facility for users of synchrotron X-ray beams. This ground-breaking machine expanded researchers' concept of what was possible, by creating X-ray beams that are one billion times more powerful than the routine X-rays delivered at dentists' offices.

## CONTACT

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