LAWRENCE BERKELEY NATIONAL LABORATORY

The Advanced Light Source (ALS), an electron accelerator, is one of the world's most powerful sources of X-rays and ultraviolet radiation. The ALS has created entirely new research opportunities in atomic and molecular physics, materials and surface sciences, biology, chemistry, and even medicine. The 1-to-2 GeV light source consists of a storage ring 643 feet in circumference that surrounds a booster synchrotron to which is attached a 25-foot long linear accelerator. Electrons are injected into the storage ring, where magnetic fields cause them to emit intense light—synchrotron radiation—that is sent through beamlines to dozens of experimental stations. This light, ideal for studying such important elements as carbon, oxygen, nitrogen, sodium, and calcium, will be used for diverse purposes, including biological imaging, the study of chemical reaction dynamics, the fabrication of microelectronic devices, and the identification of elements and atomic arrangements on the surface of materials.