

Abstract Submitted  
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**The soft x-ray materials research (SXR) instrument at the Linac Coherent Light Source** JOSHUA J. TURNER, Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, CA, OLEG KRUPIN, European XFEL, Hamburg, Germany, WILLIAM SCHLOTTER, Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, CA — The soft x-ray materials science research (SXR) instrument completed commissioning in June 2010 and began experimental user operations shortly afterwards. This instrument delivers intense, ultra-short soft x-ray pulses from the Linac Coherent Light Source, the free-electron laser at the SLAC National Accelerator Laboratory. These are fully coherent and can contain up to  $10^{13}$  photons per pulse (or about 3 mJ per pulse) with bunch lengths from 300 femtoseconds down to sub-10 femtoseconds. The instrument includes a monochromator whose energy range spans energies from 480 eV - 2000 eV and a Kirkpatrick-Baez mirror system to create a focal spot of a few microns in diameter. The SXR instrument has a diverse set of end stations available to conduct a large variety of experimental techniques such as coherent imaging, resonant x-ray diffraction, photoelectron spectroscopy, and x-ray emission and/or absorption. First studies include fields spanning liquid femtosecond chemistry and time-resolved resonant inelastic x-ray scattering to ordering in solids and ultrafast magnetization. An overview of the instrument and its capabilities will be given.

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