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A New Macromolecular Crystallography Beam Line at the Stanford Synchrotron Radiation Laboratory Designed for the Analysis of Very Small Crystals. Daniel Harrington, Andy Ringwall, Jean-Charles Castagna, Armin Busse, James Safranek, Aina Cohen, Thomas Rabedeau, Stanford Synchrotron Radiation Laboratory, Stanford Univ., 2575 Sand Hill Rd., MS99, Menlo Park, CA 94025 USA.

The Stanford Synchrotron Radiation Laboratory, through a generous contribution from the California Institute of Technology, is building a new macromolecular crystallography beam line that will take full advantage of the new SPEAR3 source.

Particular attention is being given to producing a beam line capable of analyzing extremely small crystals, both by maximizing the radiation brilliance and developing tools necessary to easily align and collect data on these samples. The source of the X-rays will be a mini-gap, in-vacuum undulator in the east pit region of the SPEAR3 ring arranged in a chicane with a second, future beam line source. The source phase space will be coupled to the focal position phase space via 3 rhodium-coated mirrors, two of which will independently focus the beam in the horizontal and vertical directions. A liquid nitrogen-cooled pair of Si(111) crystals will provide monochromatic radiation between 6 and 18keV (2.07 - 0.69Angstroms). This design has been analyzed using ray tracing, FEA of thermally sensitive components, and various flux calculations. New devices are being developed or acquired which will permit the visualization of crystals on the 5um scale and the automated screening of crystals. When completed, 60% of the beam time for this resource will be available for the general user community.