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Testing the Compact Light Source: A Miniature Synchrotron Light Source for the Homelab. Ronald D. Ruth, Jeffrey Rifkin, Rod Loewen, Lyncean Technologies, Inc.

Past research at Stanford Linear Accelerator Center has led to a new x-ray source concept, a miniature synchrotron light source.[*] This research spawned a new corporation, Lyncean Technologies, which has recently completed development of the Compact Light Source (CLS). The CLS is a tunable, homelab x-ray source with up to three beamlines that can be used like the X-ray beamlines at the synchrotrons--but it is about 200 times smaller than a synchrotron light source. The compact size is achieved using a laser undulator and a miniature electron-beam storage ring. The photon flux on a sample will be comparable to the flux of highly productive synchrotron beamlines. In this presentation, we will first introduce the Compact Light Source and show how it can bring the quality, tunability and flux of a synchrotron beam line into an X-ray scientist's local laboratory. At Lyncean Technologies, Inc. we have recently completed the construction of a production prototype source with funding from the NIGMS Protein Structure Initiative. We will finish the presentation showing details of our initial testing of the prototype CLS, X-ray optics and endstation.

[*]Z.Huang and R.D.Ruth, "Laser-Electron Storage Ring", *Phys. Rev. Lett.*, 80:976-979, 1998.

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