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The LCLS Matter under Extreme Conditions Instrument PHILIP HEIMANN, HAE JA LEE, BOB NAGLER, ERIC GALTIER, EDUARDO GRANADOS, BRICE ARNOLD, ZHOU XING, SLAC National Accelerator Laboratory — The LCLS MEC instrument is comprised of x-ray optics and diagnostics, a large target chamber and nanosecond and femtosecond laser systems. The x-ray focusing is accomplished by Be lenses. An upgrade of the femtosecond laser system is underway first to an energy of 1 J and then to 7 J. Diagnostics include forward and backward scattering x-ray spectrometers, a VISAR interferometer and area detectors for x-ray diffraction. A multiplexing method, to provide beamtime at two instruments, has been developed by translating a mirror. Examples of scattering, diffraction and imaging experiments at MEC will be presented.

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