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L- and K-shell emission from X-FEL heated iron PHILIP HEIMANN, SLAC National Accelerator Laboratory, STEPHANIE HANSEN, GUILLAUME LOISEL, JAMES BAILEY, Sandia National Laboratory, ELISEO GAMBOA, SIEGFRIED GLENZER, SLAC National Accelerator Laboratory, ROBERTO MANCINI, University Nevada Reno, ALISON SAUNDERS, ROGER FALCONE, University of California, Berkeley, ERIC GALTIER, SLAC National Accelerator Laboratory — At the LCLS MEC instrument, a tightly focused X-ray FEL beam is used to isochorically heat thin iron samples. Two compound refractive lenses produce a focus estimated to be 0.5 microns (FWHM). The L-emission from the hot, solid-density samples is measured by RAP(001) crystal and grating spectrometers. In addition, the K-emission is observed by a Ge(111) crystal spectrometer. The L-shell emission from iron, which is initially photoionized by the X-ray FEL, tests recent measurements indicating higher-than-predicted broadening of the L-shell emission lines. Heating at 7 and 9.2 keV photon energies compares different heating mechanisms.

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