

XFEL induced k-shell fluorescence in the solid to plasma regime

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High intensity XFELs have allowed uniform heating of solids on the micron scale and unique plasma diagnosis through x-ray spectroscopy and scattering. Here, we present results of XFEL heating and simultaneous fluorescence spectroscopy on mid-Z elements. The k-alpha and k-beta emission spectra are measured at several intensities and photon energies. The main features of the spectra are discussed and compared with models. We highlight the importance of features that persist from the solid-state to the plasma regime, that are important in the analysis of spectra in the warm dense regime, with temperatures near and below the Fermi temperature.

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