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Modeling of EUV Radiation from low-Z plasmas with applications to pulsed power experiments P.G. WILCOX, U.I. SAFRONOVA, A.S. SAFRONOVA, M.F. YILMAZ, V.L. KANTSYREV, K. WILLIAMSON, University of Nevada, Reno, K.W. STRUVE, Sandia National Laboratories — Investigation of MITL plasma formation is important for finding ways to increase power and energy transmission to the load of a pulse power generator. The MITL plasma consists of low-Z elements such as, for example, carbon and oxygen. An appropriate method of diagnosing these ions is EUV spectroscopy. Recently, UNR has experimentally simulated plasma conditions of a SNL-Z MITL using a compact laser-plasma x-ray/EUV facility. EUV spectra from experiments with polyethelene and mylar slabs were collected by a spectrograph with a sliced multilayer grating which can cover a broad spectral region of 130-280 Å. In the present work, we report the further improvement of previously developed non-LTE carbon and oxygen models. In particular, the detailed comparison of our atomic data for C and O ions with results from other codes and with NIST atomic data was performed. Then, more ionization stages and configurations were added to the models to improve the comparison with the EUV spectra. As a result, the new temperature- and density-sensitive, diagnostically important spectral lines were identified and suggested to use for MITL diagnostics. Work supported by the DOE/ NNSA under UNR grant DE-FC52-01NV14050 and by Sandia National Laboratories under DOE contract DE-AC04-94AL85000.

A.S. Safronova
University of Nevada, Reno

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