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X-ray M-shell spectra of multiply-charged tungsten ions produced at the energy of the electron beam of 3.9 keV at the LLNL EBIT TRAVIS HOPPE, ALLA SAFRONOVA, ULYANA SAFRONOVA, PAUL NEILL, University of Nevada, Reno, CLIFF HARRIS, Gulf Coast Community College, PETER BEIERSDORFER, GREG BROWN, Lawrence Livermore National Laboratory, KEVIN R. BOYCE, RICHARD KELLY, CAROLINE KILBOURNE, SCOTT PORTER, NASA — X-ray M-shell spectra of multiply-charged tungsten ions are spectroscopically studied. These spectra were collected at the LLNL EBIT-I at the energy of the electron beam of 3.9 keV and recorded by a broad-band x-ray microcalorimeter spectrometer (XRS). The XRS covered the spectral region from 3.5 to 8 Å, which represented several distinct groups of lines due to 3-4, 3-5, and 3-6 transitions. The development of spectroscopic modeling of M-shell tungsten spectra is presented. Modeling indicates that Ni-like lines dominate at this electron energy and include not only the allowed E1 transitions but also the forbidden M1 and E2 transitions. The advantage of using LLNL EBIT data for the development of M-shell diagnostics of plasmas is shown. Work was supported by DOE-NNSA/NV Cooperative Agreement DE-FC52-01NV14050. Work at LLNL was performed under the auspices of the DOE by UC-LLNL under contract W-7405-Eng-48.

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