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EUV emission from Sn plasmas[1] JAMES COLGAN, Los Alamos National Laboratory, JORIS SCHEERS, FRANCESCO TORRETTI, RUBEN SCHUPP, Advanced Research Center for Nanolithography, AMANDA NEUKIRCH, JOE ABDALLAH, MANOLO SHERRILL, CHRISTOPHER FONTES, PETER HAKEL, Los Alamos National Laboratory, OSCAR VERSOLATO, Advanced Research Center for Nanolithography, DAVE KILCREASE, Los Alamos National Laboratory — We report on our continuing efforts to understand the EUV emission from tin plasmas of interest to nanolithography. The intense and narrow emission of EUV radiation centered at 13.5 nm is of interest to the micro-electronics industry where it has much potential for etching smaller features on micro-processors. The tin plasma of relevance (at a temperature around 30 eV and electron density around 10^{21} cm^{-3}) is interesting from an atomic physics perspective, since it requires highly accurate atomic structure and transition information from complex open $4p$ and $4d$ subshells of tin ions from Sn^{8+} to Sn^{15+}. Such calculations involve large-scale structure calculations involving many thousands of energy levels that require inclusion of full configuration-interaction to obtain the required accuracy. We use the Los Alamos suite of atomic physics codes and plasma emission calculations from the ATOMIC code to model such tin plasmas and compare them to recent measurements of emission from molten tin droplets illuminated by a high-intensity Nd:YAG laser performed at the ARCNL. We find good agreement between the modeling predictions and the emission measurements at various laser intensities. Latest results will be discussed.

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