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Quantum Molecular Dynamics Simulations of Optical Reflectivity of Shock-Compressed Tin JOEL KRESS, LEE COLLINS, Los Alamos National Laboratory, STEPHANE MAZERVET, CEA/DAM — Shock-compression experiments have measured the optical reflectivity of tin to detect: (1) a solid-solid phase transition (β to BCT); (2) melting on the Hugoniot curve, and; (3) melting during the release of the strongly shocked material. Recent quantum molecular dynamics (QMD) simulations have been successful at determining the optical properties of warm, dense materials such as shock-compressed deuterium, exploding wires made of aluminum and copper, and laser-heated thin films of gold. In this work, we present QMD calculations of the optical conductivity and reflectivity of solid (cold) β tin, representative of shock-compressed and shock-released states. Calculated differences in the optical reflectivity between the cold and warm states will be compared with the measurements from shock-compressed experiments.

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