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Phase diagram of shock and ramp-compressed tin AMY LAZICKI, JONATHON EGGERT, RYAN RYGG, DAMIAN SWIFT, JAMES MCNANEY, GILBERT COLLINS, Lawrence Livermore National Laboratory — We will present powder x-ray diffraction results on laser-ramp-compressed solid tin up to 600 GPa, and discuss new methods for detecting the melting transition. Tin has a complex phase diagram with multiple observed and predicted high pressure phases and a moderate melting temperature, making it an ideal subject for a fundamental study of material properties using new techniques. Ramp compression in the solid allows access to extremely dense condensed phases and in the liquid the possibility for dynamically freezing molten tin. With newly developed x-ray diffraction methods we examine crystal structure, strength and texture in the dynamically compressed phases, and explore the possibility of a new method for mapping out melting curves.

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