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Time scale for rapid resolidification in the presence of competing solid phases FRED H. STREITZ, MEHUL V. PATEL, JAMES N. GLOSLI, Lawrence Livermore National Laboratory — We investigate the time scale for pressure-induced solidification in a molten metal by simulating the process using molecular dynamics techniques. We find that the time to solidification in the simulation depends on the availability (or lack thereof) of competing solid phases into which the liquid can crystallize. We demonstrate this dependence using both a highly accurate, quantum-based potential (the MGPT potential) and simple, Morse-like potentials that have been modified to alter the relative stability of various solid phases.

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