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Development of third harmonic generation as a short pulse probe of shock heated material WILL GRIGSBY, MICHAEL DOWNER, The University of Texas at Austin, JEFF COLVIN, Lawrence Livermore National Laboratory, TODD DITMIRE, The University of Texas at Austin — We are studying laser-produced shock waves in silicon (100) at pressures up to 1.5 Mbar. To examine the material dynamics, including shock induced melt, we are performing pump-probe experiments utilizing 500 ps and 40 fs laser pulses from a Ti:sapphire laser. Two-dimensional time-resolved interferometry reveals information about the shock breakout, while third harmonic light generated at the rear surface is used to infer the crystalline state of the material as a function of time.

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