

Abstract Submitted
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Coherent THz electromagnetic radiation emission as a diagnostic of ultrafast phase transformations in shocked CdSe EVAN REED, Lawrence Livermore National Laboratory, MICHAEL ARMSTRONG, KIYONG KIM, JAMES GLOWNIA, WILLIAM HOWARD, EDWIN PINER, JOHN ROBERTS — We review our experimental observations of THz radiation from shocked piezoelectric materials. Using molecular dynamics simulations coupled to Maxwell's equations, we show that the ultrafast transformation of wurtzite CdSe to high pressure phases under shock compression is accompanied by detectable electromagnetic radiation emission. The radiation is in the 100 GHz frequency range, corresponding to the timescale of the onset of the phase transformation. The sign of the electric field contains information about the atomic transformation pathway. This work was performed in part under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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