

Abstract Submitted
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High-Pressure Vibrational Spectroscopy of Polymers¹ ERIK EMMONS, RICHARD KRAUS, SRIVIDYA DUVVURI, JEFFREY THOMPSON, AARON COVINGTON, University of Nevada, Reno — Polymers are often subjected to extreme conditions of high pressure and temperature in shock compression experiments and in their use as binders in high explosives. We have begun a program to examine polymeric materials at high pressures in a diamond anvil cell using infrared and Raman vibrational spectroscopies. There is a significant lack of measurements of basic spectroscopic data on scientifically and technologically interesting polymeric materials at high pressure. Data for different materials, including pressure-dependent FTIR absorption spectroscopy of poly (methyl methacrylate) (PMMA) will be presented. The data were analyzed to determine mode Grüneisen parameters and vibrational anharmonicities. Such measurements are useful for interpreting experimental studies of shock compression of polymers as well as benchmarking theoretical models of the behavior of polymers under pressure.

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