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Optical Absorption and Raman Spectroscopy of Multiple Shocked Liquid Benzene to 10 GPa S. ROOT, Y.M. GUPTA, Washington State University — Liquid benzene samples were multiply shocked to peak pressures ranging from 3 GPa to 10 GPa to examine physical and chemical changes in benzene. A xenon flashlamp was used to probe the visible spectrum of benzene for loses in transmitted light intensity caused by changes in the electronic structure (absorption) or a possible liquid to solid phase transition (scattering). Raman spectroscopy was used to corroborate transmission measurements by examining changes in the benzene vibrational modes. The C-C symmetric ring breathing mode (992 cm^{-1}), C-H symmetric stretch (3061 cm^{-1}), along with several weaker modes at 607 cm^{-1}, 1178 cm^{-1}, 1586 cm^{-1}, and 1606 cm^{-1} were monitored during shock loading. An EOS was developed to calculate the temperature of the shock compressed benzene. The present work has demonstrated that liquid benzene remains unchanged during multiple shock loading up to 10 GPa. Work supported by ONR and DOE.

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