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Shock Compression of Heterogeneous PMMA/Glass Particulate Composite MICHAEL RAULS, GURUSWAMI RAVICHANDRAN, California Institute of Technology — Understanding the transmission of shock waves in heterogeneous materials is of considerable interest in impact and blast applications. The structure and propagation of shock waves in heterogeneous solids is related to their microstructure and material properties. Shock wave experiments conducted on a model particulate composite consisting of glass spheres in a PMMA matrix are presented. The composite is prepared by a compression molding process to fuse PMMA powder with randomly distributed glass spheres. The specimens are subjected to normal plate impact using a powder gun at velocities in the range of 1 to 2 km/s. The particle velocity at the rear surface is measured using a VISAR or PDV system. The measured velocity profiles are examined in relation to the microstructure of the particulate composite. Exploration of the heterogeneity of the shock front is also explored using a multi-point velocity measurement system. The effect of sphere size and density on the propagation of shock waves in the model composite is discussed.

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