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Planar Impact Study of a Shear Thickening Fluid OREN PETEL, ANDREW HIGGINS, McGill University — Dense suspensions of particles in liquids often exhibit non-Newtonian behavior, such as shear thickening, under the appropriate stimulus. Recently, there has been increasing interest in these materials for protective applications, but their dynamic response has not yet been extensively characterized. The current study examines the behavior of these types of suspensions under a plate impact loading scenario. The impacts were generated by steel flyer plates launched at velocities of up to 500 m/s from a single-stage 64-mm-bore gas gun. The shear thickening fluids consisted of micron-scale ceramic powders (amorphous silica and silicon carbide) suspended in ethylene glycol at near-limit volume fractions. Shock velocity and dynamic strain gage measurements are reported.

Oren Petel
McGill University

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