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A Study of Fragmentation in a Ni-Al Structural Energetic Material[1] B. AYDELOTTE, Georgia Institute of Technology, C.H. BRAITHWAITE, Fracture and Shock Physics, SMF Group, Cavendish Laboratory, N.N. THADHANI, Georgia Institute of Technology, M. TREXLER, United States Army Research Laboratory, D.M. WILLIAMSON, Fracture and Shock Physics, SMF Group, Cavendish Laboratory — A study of fragmentation behavior of a Ni-Al structural energetic material was undertaken to determine fragment size and distribution as well as study the impact of material microstructure on the fragmentation process. Rings were fabricated from a nearly 100% TMD Ni-Al structural energetic material and subjected to explosive fragmentation experiments. Fragments were recovered for subsequent analysis; PDV velocity data was concurrently collected. Recovered fragments show negligible ductility suggesting that brittle fracture behavior dominates the fragmentation process. Quantitative microscopy and comparisons with existing fragmentation models are presented.

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