

Abstract Submitted  
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**Fragmentation of Brittle Reactive Materials**<sup>1</sup> JAKE KLINE, JOE HOOPER, Naval Postgraduate School — Reactive materials commonly produce large quantities of fine, brittle debris. We discuss approaches to recover and analyze these fragments in explosive or impact tests without unwanted secondary fragmentation. A series of reactive materials were produced from pure aluminum powders and used to fabricate explosive cases and small preformed fragments. Lab-scale detonation and gun-launch experiments were used to fracture these samples in realistic scenarios, and the debris was carefully recovered for post-mortem analysis. We discuss both the soft-catch process as well as methods to analyze the enormous numbers of micron-scale fragments produced by these events. A series of explosive tests in artificial snow, argon, and air was used to show the evolution of the fragment distribution for the reactive cases and help understand the combustion energy release.

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