

Abstract Submitted  
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**Reactivity of Ti-B, Cr-S, and Mn-S powder systems during explosively-driven collapse**<sup>1</sup> MATTHEW SERGE, ATEFEH NABAVI, McGill University, PO-HSUN CHIU, University of California, San Diego, ANDREW HIGGINS, McGill University, VITALI NESTERENKO, University of California, San Diego — Metal-metal and metal-sulfur reactive powder mixtures have been previously tested for initiation of reaction via planar, normal-shock loading. In addition to reacting under shock, such powder mixtures may undergo exothermic reaction under other types of mechanical loading. The thick-walled cylinder (TWC) technique was performed on samples of Ti-B (1:2 molar ratio), Cr-S (1.15:1 molar ratio), and Mn-S (1:1 molar ratio). These experiments were performed to determine the effect of large shear strains exerted on reactive metal powder mixtures and to establish the relative effectiveness of shear loading in comparison to shock loading in initiating reaction. Recovered samples were analyzed via SEM and XRD to determine the degree of reaction.

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