

## INVESTIGATION OF HIGH STRAIN RATE PROPERTIES OF A356-FLY ASH SYNTACTIC FOAMS

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### Abstract

Hollow particle filled metal matrix composites (syntactic foams) are promising in applications where damage tolerance, compressive and impact energy absorption as well as low density are needed. In the present work, aluminum alloy (A356) and fly ash cenospheres are used as a matrix material and fillers, respectively, in synthesizing syntactic foams. Fly ash is used in 5 and 20 vol.% in these composites. A split-Hopkinson pressure bar (SHPB) setup is used to perform the high strain rate testing and the results are compared with quasi static compressive properties of the same composites. The elastic modulus and energy absorption were found to increase with increasing strain rate in these composites. High speed image acquisition, optical microscopy, and scanning electron microscopy are used to obtain information about the deformation and failure pattern of the specimens.

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