Hydrocode Postprocessing Study of Optical Signatures from Fragment Distributions


Hypervelocity impact fragments generate optical signatures that provide key information about the shock-induced fragmentation behavior at high strain rates. This is because of a key dependence on fragment temperatures and size distributions which in turn vary according to the thermodynamics of energy partitioning and material behavior under high strain rates. We have carried out CTH calculations of the widely experimented case of spheres on plates to simulate the material response. Fragmentation patterns generated according to different fracture models of response under calculated strain are used to predict optical signatures from the resultant debris cloud. For prediction of optical signatures, several challenges need to be faced including CTH incorporation of accurate temperature dependent equations of state and large strain rate fragmentation models.