

Abstract Submitted
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Towards the role of interfacial shear in shock-induced intermetallic reactions MARK COLLINSON, DAVID CHAPMAN, Imperial College London, DAVID WILLIAMSON, University of Cambridge, MARK BURCHELL, University of Kent, DANIEL EAKINS, Imperial College London — Shock-induced intermetallic reactions have previously been shown to occur on a nanosecond timescale, within the rise time of the applied shock wave. Work in this area to date has however concentrated on continuum scale measurements, raising questions as to the processes occurring at micro and meso scales. Mass transfer due to inter-facial shear at material interfaces has been suggested as a possible explanation. We will present initial work examining the role of friction on this mass mixing process across a binary interface. This work includes plate impact experiments on an inert stainless steel – aluminum friction pair, employing spatially resolved interferometry. Results from a series of metal ball-on-angled plate impact experiments at 1-2 km/s will also be presented, supported by high-speed imaging and target recovery.

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