Abstract Submitted
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Modeling reactive conversion of Ce ejecta in H_2 and D_2 gases[1] J.D. SCHWARZKOPF, D.G. SHEPPARD, J.E. HAMMERBERG, M.M. SCHAUER, W.T. BUTTLER, R.K. SCHULZE, Los Alamos National Laboratory — Shocked Ce metal in contact with a reactive gas such as H_2 or D_2 produces a distribution of ejecta particles that react with the gas to form Ce hydrides or deuterides. We present an average particle reaction diffusion model to calculate particle and gas temperatures and reaction fractions. We compare model results with recent HE driven Ce experiments into reactive D_2 and non-reactive He gases for a variety of initial gas pressures from 2 to 8 atmospheres at initial temperatures of 300 K. We find consistent agreement with radiance temperature measurements as a function of time using particle distributions from Mie scattering data resulting in Ce deuteride mass conversion fractions in D_2 gas of order 10 - 15 %.

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