

Abstract Submitted
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Shock-induced

Spallation Phenomena in Copper-Niobium Nanolayered Composites NI-RAJ GUPTA, University of North Texas, ALEXANDER STUKOWSKI, Lawrence Livermore National Laboratory, MICHAEL BASKES, Los Alamos National Lab, SRINIVASAN SRIVILLIPUTHUR, University of North Texas — Shock-induced spallation phenomena in Copper-Niobium nanolayered composites conforming to a Kurdjumov-Sach's orientation relation were simulated using molecular dynamics to determine both spallation strength and the nature of void formation. The target structures consisted of varying numbers of alternating copper and niobium layers with thicknesses varying from 1 nm to 22 nm. Flyer velocities ranged from 3.5 to 11.5 Å/ps, corresponding to an approximate strain rate of 10^9 s^{-1} . Spallation occurs in the vicinity of the Cu-Nb interface, and always in the copper layer. The proposed factors contributing to spallation will be discussed, as well as what effect the layer morphology has on the strength of the target.

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