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Hypervelocity Impact on Interfaces: A Molecular-Dynamics Simulations Study MARTINA E. BACHLECHNER, Fairmont State University, ELI T. OWENS[1], ROBERT H. LEONARD, BRONWYN C. COCKBURN, West Virginia University — Silicon/silicon nitride interfaces are found in micro electronics and solar cells. In either application the mechanical integrity of the interface is of great importance. Molecular-dynamics simulations are performed to study the failure of interface materials under the influence of hypervelocity impact. Silicon nitride plates impacting on silicon/silicon nitride interface targets of different thicknesses result in structural phase transformation and delamination at the interface. Detailed analyses of atomic velocities, bond lengths, and bond angles are used to qualitatively examine the respective failure mechanisms.

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