

Abstract Submitted  
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**Destruction of nanograins by grain-grain collisions** NAOFUMI OHNISHI, Center for Research Strategy and Support, Tohoku University, EDUARDO BRINGA, BRUCE REMINGTON, GEORGE GILMER, ROGER MINICH, Lawrence Livermore National Laboratory, YASUTAKA YAMAGUCHI, Department of Mechanical Engineering, Osaka University, ALEXANDER TIELENS, NASA Ames Research Center — Atomistic simulations of grain-grain collisions have been carried out for spherical grains of 1.4 and 4 nm radii with relative velocities of 3.6–6.1 km/s and a number of random impact parameters. Since the initial grains are crystallites without any pre-existing defects, grain shattering due to nucleation of cracks was not observed in our simulations. We find grain fusion in some events, but generally melting occurs due to the small size of grain. The melting leads to nucleation, growth and linkage of voids in the melt, and finally small clusters are produced through a web-like structure. The size distribution does not obey a single power law and can be considered as four different regimes in the cluster size.

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