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Molecular dynamics simulations of crack nucleation near nanoparticle inclusions. JEFFERY HOUZE, BOHUMIR JELINEK, SEONG-GON KIM, Mississippi State University — We studied nucleation of cracks near a nanoparticle embedded in a matrix under tension with molecular dynamic simulations using Modified Embedded Atom Method (MEAM) potentials for Al and Mg. Uniaxial tension was applied to an Al(fcc) matrix containing an embedded Mg(hcp) nanoparticle. The same study was performed with an Al nanoparticle embedded in a Mg matrix. Animations showing the damage evolution in both alloying situations and the effect of the materials different tensile strengths on crack nucleation will be presented.

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