

Department of Physics & Astronomy

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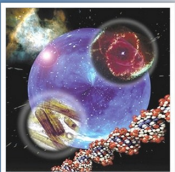
Friday, Feb, 3 2012

Time: 3:15 p.m.-4:15 p.m.

BB 3.04.18

Physics and modeling of grain-size effect on twinning in nanostructured fcc metals

Deformation twinning is an effective approach for enhancing the ductility while at the same time also improves the strength. In this talk, I will present the physics and modeling on the effect of grain size on deformation twinning in nanocrystalline fcc metals. An analytical model based on observed deformation physics, i.e. grain boundary emission of dislocations, will be first presented. The result will be then compared with experimental observation of an optimum grain size range for the formation of deformation twins and the inverse grain-size effect. The physical origin of the observed grain size effect will be delineated. In addition, the mechanism of partial dislocation emission to form twins will be briefly presented.



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