

Competition Between Generation of Nanovoids and Nanocracks in Bimodal Metal-Graphene Composites

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Abstract. A theoretical model which describes micromechanisms of the deformation-induced formation of nanovoids and the competition between the nanovoid formation and the deformation-induced formation of nanocracks in bimodal metal-graphene composites is presented. In the framework of the model, the formation of nanovoids and nanocracks occurs at the grain boundary (GB) disclination dipoles near the graphene inclusions. It is demonstrated that the formation of nanovoids at the GB disclination dipoles is energetically favorable process in deformed bimodal Ni-graphene composite.

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