

عنوان مقاله:

Distribution Effect of Nanostructure Reinforcement in Al/Ni Aluminides Composite on Homogenization and Mechanical Properties

محل انتشار:

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خلاصه مقاله:

Aluminum base composites (AMC) reinforced with Ni-aluminides have been proposed as substitutes for ceramic reinforced composites [1] because they have sufficient mechanical properties. In metal matrix composites blending or mixing, is just as important, because it controls the final distribution of reinforcement particle and porosity in green compacts after compaction, which strongly affects the mechanical properties of PM materials produced. Segregation and clustering are the common problems associated with the present state-of-the-art blending or mixing methods. The phenomenon of segregation is inherent to any loose powder configuration which is subjected to mechanical blending [2]. The reason for segregation and clustering includes different flow characteristics between metal powders and reinforcement particles and the tendency of the agglomeration of particles to minimize their surface energy [3]. The segregation and clustering during blending can be overcome by a technique developed during the 1960s called mechanical alloying (MA) [4]. Mechanical alloying is a dry, high-energy ball-milling process for producing composite metal powders with a fine controlled microstructure [5]. This process consists of the repeated fracturing and rewelding of a mixture of particles and metal powders by high-energy compressive-impact forces to yield a uniform distribution of particles and metal powders with a satisfactory microstructure after compaction [4,6], also contribute to the strengthening of these MMCs. In this paper the effect of mixing condition and distribution of nanostructure reinforcement on the homogenization and mechanical properties of AMC has been investigated

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