

## عنوان مقاله:

Fabrication of TiC particulate reinforced Ni-50Fe super alloy matrix composite powder by mechanical alloying

## محل انتشار:

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## خلاصه مقاله:

Mechanical alloying is a powder metallurgy processing technique involving cold welding, fracturing, and rewelding of powder particles in a high-energy ball mill. In this work, NiFe-TiC composite powders were prepared by mechanical alloying process using planetary high-energy ball mill. The effect of TiC addition by weight percent on the NiFe solid solution formation, grain size, lattice parameter, internal strain and hardness of composite powders was investigated as a function of milling time,  $t$ , (in the 0-25 h range). Microstructural and phase characterizations investigation of the mechanically alloyed powders were carried out using X-ray diffractometer (XRD) and scanning electron microscope (SEM). The results showed that the brittle particles of TiC accelerate the milling process by increasing the matrix deformation and enhancing the welding and the fracture of particles. We also found that the NiFe solid solution formation occurred at earlier time of mechanical alloying with increasing the TiC content. Moreover, it was shown that with increasing the TiC by weight percent, smaller crystallite size and more hardness are obtained after mechanical alloying.

## کلمات کلیدی:

NiFe, Superalloys, mechanical alloying, Titanium Carbide

## لینک ثابت مقاله در پایگاه سیویلیکا:

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