

## عنوان مقاله:

Production of Dispersed Ceramic Nano-Particles in Al Alloy Using Friction Stir Processing

## محل انتشار:

فصلنامه فرایندهای نوین در ساخت و تولید, دوره 5, شماره 3 (سال: 1395)

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## خلاصه مقاله:

In this research, surface composite layers containing nano sized TiB<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>-TiB<sub>2</sub>, ZrO<sub>2</sub> and CNT particles have been fabricated on Aluminum alloy substrates by friction stir processing. The effects of different processing variables such as number of passes and strengthening particle distribution, hardness, and wear properties of surface nanocomposite layers have been evaluated by electron microscopy, hardness, and wear test. Results showed that surface properties of aluminum alloy will be enhanced and the optimum conditions of properties which can be determined by comparing the effects of different parameters will be obtained. An increase in the number of passes up to four modifies microstructure and accordingly mechanical and wear properties were enhanced. Surface composite produced by FSP significantly improved the dry sliding wear resistance of the Al 6061 alloy by changing the wear mechanism. The FSPed sample with Al<sub>2</sub>O<sub>3</sub>-TiB<sub>2</sub> particles had higher wear resistance in comparison with those with TiB<sub>2</sub>, ZrO<sub>2</sub> and CNT. This enhancement is a consequent of better bonding between particles and aluminum matrix and higher microhardness.

## کلمات کلیدی:

Aluminum Alloy, Friction Stir Processing, Titanium diboride, CNT, Zirconia, Wear Properties

## لینک ثابت مقاله در پایگاه سیویلیکا:

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