

## عنوان مقاله:

Effect of Accumulative Roll Bonding Process on Mechanical Properties of Al-Based Composite Reinforced with Nano-Trioxide Tungsten

## محل انتشار:

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## خلاصه مقاله:

In the present study, an Al/WO<sub>3</sub>p metal matrix nanocomposite was fabricated by accumulative roll bonding (ARB) technique. Mechanical properties of specimens were investigated by microhardness and tensile test. Several factors that affect uniform distribution particles were investigated. After ۱۲ ARB cycles, a nanocomposite with a uniform distribution of nanoparticles was produced. It was shown that the tensile strength of the ARBed composite enhanced with the increasing number of ARB cycles. After the first cycle, a significant increase was observed in the tensile strength of nanocomposite in ۲.۰ percent volume of WO<sub>3</sub>p, from ۸۹ MPa to ۱۲۸ MPa (almost ۱.۴ times increase in strength). After the final cycle, the tensile strength value increased to ۲۰۵ MPa (that is almost ۲.۳ times increase in strength) due to the strain hardening and grain refinement. The X-ray diffraction results showed that Al/WO<sub>3</sub>p nanocomposite with the average crystallite size of ۴۱ nm was successfully attained after ۱۲ cycles of the ARB process. Finally, observations revealed that the fracture mode in Al/WO<sub>3</sub>p nanocomposite was of type shearing ductile fracture .with elongated shallow dimples

## کلمات کلیدی:

Accumulative Roll Bonding, Nanocomposite, Microstructure, Mechanical Properties

## لینک ثابت مقاله در پایگاه سیویلیکا:

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