

## عنوان مقاله:

IN SITU FABRICATION OF Al<sub>20</sub>Zn<sub>4</sub>-Mg<sub>2</sub>Si COMPOSITE BY SPARK PLASMA SINTERING OF REACTIVE MECHANICALLY ALLOYED POWDER

## محل انتشار:

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## خلاصه مقاله:

In situ Al<sub>20</sub>Zn<sub>4</sub>-Mg<sub>2</sub>Si composite was fabricated by spark plasma sintering (SPS) of reactive powder. Reactive powder was obtained from mechanical alloying (MA) of elemental powders. Clad layers of in situ composite were fabricated on Al substrates by spark plasma sintering (SPS). Structural evolution during MA process and after SPS was investigated by X-ray diffractometry (XRD). Scanning electron microscopy (SEM) was utilized to study the microstructure of sintered samples. Hardness and tensile behavior of sintered samples were investigated. The results showed that SPS of mechanically alloyed unreacted powder can result in the in situ formation of Mg<sub>2</sub>Si and Mg<sub>2</sub>Al<sub>3</sub> within the Al matrix. SPSed clad layer showed a sound and clear interface to the Al substrate with a hardness of about 140 HV. Sintered in situ composite exhibited a tensile strength of 288 MPa.

## کلمات کلیدی:

Al composite, Mg<sub>2</sub>Si, Mechanical alloying, Spark plasma sintering

## لینک ثابت مقاله در پایگاه سیویلیکا:

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