سیویلیکا - ناشر تخصصی مقالات کنفرانس ها و ژورنال ها
گواهی ثبت مقاله در سیویلیکا
CIVILICA.com

عنوان مقاله:

Microstructure and hardness evaluation of Al-SiO2 nanocomposites produced with ultrasonic technique

محل انتشار:

سومین کنفرانس بین‌المللی آلومینیوم ایران IIAC2014 (سال: 1393)

تعداد صفحات اصل مقاله: 7

نویسندگان:

a salehi - *Department of Materials Engineering, Faculty of Engineering, Ferdowsi university of Mashhad, P.O. Box: 91775-1111, Mashhad, Iran*

a Babakhani - *Department of Materials Engineering, Faculty of Engineering, Ferdowsi university of Mashhad, P.O. Box: 91775-1111, Mashhad, Iran*

s Mojtaba Zebarjad - *Department of Materials Engineering, Faculty of Engineering, Ferdowsi university of Mashhad, P.O. Box: 91775-1111, Mashhad, Iran*

خلاصه مقاله:

Light weight metal matrix nanocomposites (MMNCs) can be so useful for automobile, aerospace and numerous other applications, but it is extremely difficult to disperse nanosized ceramic particles uniformly in liquid metals. Hence, this paper presents an inexpensive method for fabrication of aluminum matrix nanocomposites reinforced with SiO2 nano-sized ceramic particles. In this method, ultrasonic technique was used for increasing wettability of reinforcement nanoparticles within the aluminum melt. Microstructure study of aluminum matrix nanocomposites reinforced with different weight percentages of silicon dioxide nanoparticles (0.25, 0.5, 0.75 and 1.0 wt.%) were carried out with an optical microscope and SEM and then hardness of the samples were investigated. SEM observations validate uniform dispersion of nano-sized SiO2 in metal matrix. Hardness of the samples is also significantly increased by addition of SiO2 nanoparticles and Al-SiO2 nanocomposite at 0.75 wt.% SiO2 produces the highest hardness

کلمات کلیدی:

Al-SiO2 nanocomposite; ultrasonic; hardness; microstructure study

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/453856