Abstract

iMedPub Journals
www.imedpub.com

Nano Research & Applications

2022
Vol 1. No.S2

Fabrication and characterization of Al 7068 aluminium alloy hybrid composite reinforced with silicon carbide (SiCp) and graphite (Gr)

Shruti Firangi
Poojya Doddappa Appa (PDA), India

Abstract

Metal Matrix Composites(MMCs) are one among the fastest growing advanced materials due to their superior mechanical properties such as fracture toughness, elastic modulus and tensile strength. The objective of designing MMCs is to consolidate the desirable traits of metals, ceramics and/or polymers to overcome the drawbacks of individual properties of the materials. Aluminium metal/alloy is one of the appealing candidate materials due to its low density, better mechanical properties, corrosion resistance, wear and tear behaviour, low thermal coefficient of expansion. In addition the aluminium MMCs products may be obtained at relatively low production cost as compared to conventional metals and alloys which makes it significantly important in the various demanding fields of engineering such as aviation, defence, automobiles, dental and consumer goods. In this work Aluminium 7068 alloy have been used as a matrix and reinforced with Silicon carbide (SiCp) and Graphite (Gr). The strategy utilized for fabrication was fluid metallurgy i.e., stir casting. An effort has been made in this work to analyze the microstructure and investigation of the wear properties by varying weight percentage of reinforcements i.e., Silicon carbide (SiCp) and Graphite (Gr). Microstructure analysis carried out using Scanning Electron Microscopy (SEM) and elements present EDAX spectroscopy. Wear characteristics of Al-7086-SiCp-Gr composites was examined under dry sliding wear. The dry sliding tests were carried out for speeds 200, 400,600 rpm at loads 20N and 30N using a pin-on-disc apparatus. The result shows a refined matrix structure of the composite as compared to matrix alloy. It was observed that with the addition of SiCp and Graphite as reinforcements the MMCs improvement in wear resistance property.

Biography

Shruti Firangi, worked as Welder trainer at Deen Dayal Upadhyaya Grameen Kaushalya Yojana, Kalaburagi. She has completed her Master's in Material Science and Technology from Poojya Doddappa Appa (PDA) College of Engineering.