



International Journal of Advanced Research in Biology, Engineering, Science and Technology (IJARBEST)

Vol. 2, Special Issue 8, February 2016 in association with

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR
DEPARTMENT OF BIOTECHNOLOGY

ORGANIZES

DBT, NEW DELHI SPONSORED NATIONAL LEVEL CONFERENCE ON CONTEMPORARY TRENDS IN
BIOENERGY AND GREEN TECHNOLOGY: CHALLENGES AND OPPORTUNITIES [ORA-2016]

(25-26TH FEBRUARY 2016)

Investigation on effect of particle size and Volume fraction of Borosilicate glass in LM-6 Metal Matrix Composite for High strength nanocomposites

Krishnaprasad C.P¹, S.Sathish², C.Narendhrar³,

¹PG Scholar, Department of Manufacturing Engineering, Sri Ramakrishna Engineering College,
Coimbatore, Tamil Nadu, India

²Assistant Professor, Department of Manufacturing Engineering, Sri Ramakrishna Engineering College,
Coimbatore, Tamil Nadu, India

³Assistant Professor, Department of Nano Science and Technology, Sri Ramakrishna Engineering
College, Coimbatore, Tamil Nadu, India

Abstract:

Aluminium and its alloy finds wide applications in areas of aerospace, automotive sectors due to their properties such as light weight, better thermal conductivity etc.. Various studies indicated aluminium in its purest form provides better properties but exhibits poor machinability (LM-6). The studies indicated varying alloying elements like Cu, Si, Mg, Mn etc to improve its machinability and achieve high strength to weight ratio. The reduced cost of production is one of the major factors behind the development of MMC and its applications in replacing conventional alloys. In recent days, aluminium alloys of grades like LM6 and LM25 were normally used for manufacturing automotive components like piston and housing. The present work is a study that had been carried out at Metal Joining Research centre, Sri Ramakrishna Engineering College, Coimbatore on the replacement of traditional alloys like LM6 and LM25 with a newly developed MMC (LM6 with borosilicate glass reinforcement). It has been established that the newly developed MMC has excellent tensile and compression strength. It is also observed that if we maintain the volume fraction ($\geq 7.5\%$), of Borosilicate glass will yield better mechanical property and the machinability properties. It is proposed to expand the research work in optimizing the particle size and volume fraction of borosilicate glass in order to obtain a suitable MMC which can be a perfect replacement of conventional alloy to the society.

Keywords: stir casting, particle size, borosilicate;