

## INVESTIGATION OF EFFECT OF FORGING STAGES ON AL/SiC METAL MATRIX COMPOSITES FATIGUE BEHAVIOUR

HANAMANTRAYGOUDA M. B<sup>1</sup>, B. P. SHIVAKUMAR<sup>2</sup>, G BALAKUMAR<sup>3</sup>,  
RAMESH C G<sup>4</sup> & PRASHANTH L<sup>5</sup>

<sup>1</sup>Department of Mechanical Engineering, Sir M Visvesvaraya Institute of Technology, Bengaluru, India

<sup>2</sup>Professor, Department of Mechanical Engineering, J.S.S. Academy of Technical Education, Bengaluru, India

<sup>3</sup>Associate Professor, Department of Mechanical Engineering, Sir M. Visvesvaraya Institute of Technology  
Bengaluru, India

<sup>4,5</sup>Assistant Professor, Department of Mechanical Engineering, Sir M. Visvesvaraya Institute of Technology,  
Bangalore, India

### ABSTRACT

The objective of the present research work was to investigate to determine the effect of forging stages on Al alloy reinforced with different percentage of SiC particulate fabricated by using stir casting techniques. The casted specimens were machined into blanks and were subjected to single stage and double stage forging using Mega Newton press with graphite as a lubricant. The forged and ascast specimens were investigated for microstructures analysis and fatigue behaviour for comparison. The microstructure analysis revealed that the forged sample had higher finer grains with uniform dispersion of reinforcement. Fatigue properties of forged sample showed higher fatigue-life than that of ascast samples. The reinforcement addition of 2.5 and 5 % of SiC showed higher fatigue strength enhancement over 7.5 and 10 % of SiC additions. The fractography of fractured samples showed debonding between the metal and particle interface.

**KEYWORDS:** Metal Matrix Composite (MMC), Basalt Short Fiber, Fatigue Behaviour, Fracture Studies