ABSTRACT

Amongst the metal matrix composites, aluminum based particulate reinforced metal matrix composites have emerged as an important class of high performance materials for use in aerospace, automobile, chemical and transportation industries because of their improved strength, high elastic modulus and increased wear resistance over conventional base alloys. Recently, in situ techniques have been developed to fabricate aluminum-based metal matrix composites, which can lead to better adhesion at the interface and hence better mechanical properties.

Aluminum matrix composites (AMCs) refer to the class of light weight high performance aluminum centric material systems. The reinforcement in AMCs could be in the form of continuous/discontinuous fibers, whiskers or particulates, in volume fractions ranging from a few percent to 70%. Properties of AMCs can be tailored to the demands of different industrial applications by suitable combinations of matrix, reinforcement and processing route.

Amongst the recent developments in the Aluminium alloys one of the most important alloy being developed is the Aluminium –Titanium Diboride (Al-TiB_2). Aluminium – Titanium Diboride (Al-TiB_2) metal matrix composites have been fabricated by using an exothermic reaction between commercial purity aluminium and halide salts like K_2TiF_6 and KBF_4 by varying the weight percentage of TiB_2 (3,5 and 7%). The period of exothermic reaction was 60 minutes and reaction temperature of 800°C to investigate between the degree of reaction and the growth behaviour of TiB_2. Microstructural properties were studied by using an optical microscope and Scanning Electron Microscope. The mechanical properties of the prepared composites will be carried out on a computerized universal testing machine.