

ABSTRACT

Aluminium metal matrix nanocomposites (AMMCs) have been recognized as a promising material with excellent structural and functional characteristics that can be suggestively personalized to satisfy industrial demands as well as design requirements for a wide range of applications, including those in defense, marine, automobiles, and aerospace. Particularly, these industries are using an increasing number of components manufactured by AMMCs. When compared to monolithic materials, components manufactured from aluminium-based composites have better qualities such as tribological behaviors, hardness, stiffness, strength, and higher strength to weight ratio. Therefore, this article addresses the experimental investigation on aluminium 7075 based metal matrix (MMCs) with Magnesium Mg and fly ash (FA) as a reinforcement material with distinct ratios. Here aluminium alloy 7075, hereafter referred as AL7075, are considered as base material. The final workpieces obtained using the process of stir casting and machining are tested to compute the output response parameters like yield strength (YS), wear rate (WR), hardness, and ultimate tensile strength (UTS). In addition, the microscopy images also studied for examining the distribution of reinforcement material particles in base metal