

## **ABSTRACT**

Metal Matrix Composites (MMC's) have been developed to meet the demand for lighter materials with high specific strength, and wear resistance. Among Metal matrix composites particulate reinforced aluminium and Magnesium composites are attractive due to significant improvements in mechanical and physical properties.

Spur gears are the simplest and widely used in power transmission. In recent years it is required to operate machines at varying load and speed. Gear teeth normally fail when load is increased above certain limit. Therefore, it is required to explore alternate materials for gear manufacturing. Composite materials provide adequate strength with weight reduction and they have emerged as a better alternative for replacing metallic gears. Composites provide much improved mechanical properties such as better strength to weight ratio, more hardness, and hence less chances of failure.

In metal matrix composites, adding magnesium metal powder to aluminium molten state. Here magnesium mixed to increase the bonding strength of aluminium, it also increased the strength and stiffness of the material. This matrix is produced by stir casting process. To produce the circular blank for gear the treated molten metal is poured into the cavity in the circular die. From the circular blank the teeth were cut by milling process. Also find out the mechanical properties of aluminium and magnesium composite material by testing the rod specimen to ensure the strength and wear properties.