Effect of Graphene on Micro-Structure and Properties of MAO Coating Prepared on Mg-Li Alloy

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Ceramic coating modified with graphene was formed on Mg-Li alloy by a micro-arc oxidation process in a graphene powders (GE) added silicate electrolyte. The microstructure, composition, tribological and corrosion behaviors of the coatings were performed. The results showed that the added GE promote the formation of hard MgO and SiO₂ phases in MAO film and result in low friction coefficient and enhanced wear resistance. C element was also detected on the surface of the GE added film. With the addition of GE in silicate electrolyte, the corrosion resistance of the composite coating was improved significantly owing to the pore size decreases and film thickness increases.

Keywords: Micro-arc oxidation; Graphene; Wear resistance; Corrosion resistance

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