

عنوان مقاله:

Electrochemical and elemental characteristics of nano-composite MAO coatings on the AZ₃₁B substrate fabricated in different times and current densities

محل انتشار:

اولین همایش مهندسی عمران و منابع زمین (سال: 1401)

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نویسندگان:

Hadi Nasiri Vatan - *Department of Petroleum, Mining and Material Engineering, Faculty of Civil and Earth Resources Engineering, Central Tehran Branch, Islamic Azad University, Tehran, Iran*

Mazdak Izadi - *Department of Materials Engineering, Hamedan University of Technology, Hamedan, Iran*

خلاصه مقاله:

Micro-Arc Oxidation (MAO) also called Plasma Electrolytic Oxidation (PEO), Anodic Spark Deposition (ASD) is a relatively modern surface treatment providing elevated corrosion and wear resistance especially for light weight active metals. Electrochemical Impedance Spectroscopy (EIS) of nano-composite Micro Arc Oxidation (MAO) coatings containing graphene nanoparticles was investigated. Elemental analysis of coatings via Energy-Dispersive X-ray Spectroscopy (EDS) technique was also performed. The relation between the results of these two tests is explained in this paper. The parameter of current density was changed to fabricate two different types of ceramic coatings. Regarding Scanning Electron Microscopy (SEM) cross images of coatings, equivalent circuits were drawn for each Electrochemical Impedance Spectroscopy (EIS) tested sample and corresponding values of the circuits' element were estimated. It was found that increasing current density of coating process resulted in the composition of the outer layer of the coatings change and its resistance against crossing electrolyte increase; on the other hand its capacity property enhanced property because of increasing the surface area.

کلمات کلیدی:

MAO coating, AZ₃₁B alloy, EIS, EDS, V-t diagram

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