عنوان مقاله:

Synthesis and coating of GO / HA composite on orthopedic implant surfaces and evaluation of corrosion resistance

محل انتشار:

کنگره ملی شیمی ونانو شیمی از پژوهش تا توسعه ملی (سال: 1396)

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نویسندگان:

Mohammad Hossein Heydari - *Department of Metallurgy and Materials Engineering, Yazd Branch, Islamic Azad University, Yazd, Iran*

Mahboobeh Mahmoodi - *Department of Biomedical Engineering, Yazd Branch, Islamic Azad University, Yazd, Iran*

Amir Seifoddini - *Department of Mining & Metallurgical Engineering, YazdUniversity, Yazd, Iran*

خلاصه مقاله:

Hydroxyapatite (HA) is one of the bioceramics that has good biocompatibility. The graphene oxide (GO) due to good biocompatibility and sustainability in various applications such as biosensors and drug delivery biotechnology is used. The aim of the study was to composite coating of GO/HA using electrophoretic deposition on tantalum. The deposition process was conducted at a constant voltage of 30 V and deposition time of 10 min. The samples were characterized via scanning electron microscopy (SEM), zeta potential, FTIR and contact angle test. The hydrophilic of Ta increased after coating with GO/HA nanocomposite. The results of corrosion test showed that the corrosion current density uncoated and coated samples were 43 μA/cm2 and 1 μA/cm2, respectively and it indicated that GO/HA coating can act as a passive layer against corrosion. Also, in vitro studies showed that osteoblast-like cells proliferated in great numbers on the samples surface. Therefore, GO/HA composite coating can be a promising option for increasing the life time of Ta based orthopedic implants.

کلمات کلیدی:

Electrophoretic deposition (EPD), Tantalum, Hydroxyapatite, Graphene oxide, Biocompatibility