

عنوان مقاله:

Prevention of Corrosion in the Stainless Steel Metallic Using the Extract of Some Aquatic Plants

محل انتشار:

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خلاصه مقاله:

This study was conducted to evaluate the photocatalytic applications and the cytotoxicity effects of Ag-Se doped ZnO-Co³⁺O⁴-NiO fiveinary nanocomposite synthesized using polyanionic cellulose (PAC) polymer as a stabilizer agent. Several procedures such as XRD, FESEM, FTIR, EDX, PSA, and UV-Vis were applied to investigate synthesized nanocomposite. Consistent with the FTIR spectrum, chemical bonds were seen in the structure of the nanocomposite which approved the successful synthesis of them. The XRD pattern of the synthesized nanocomposite revealed sharp diffraction peaks with high crystallinity, and pure phases of Se, Ag, ZnO, NiO, and Co³⁺O⁴ were approved with XRD analysis. FESEM/PSA images indicate that nanocomposite was synthesized with an average size of ۲۳-۴۹ nm and relatively uniformly distributed; in addition, it has a spherical morphology. The synthesized nanocomposite exhibited excellent photocatalytic activity to methyl orange (MO) dye degradation under a UVA light source. The degradation rate of nanocomposite reached ۹۹% within ۸۰ min. The kinetic studies indicate that the degradation of MO dye follows a first-order kinetic model. The cytotoxicity of the nanomaterial was assessed on normal mouse fibroblast NIH³T³ and cancer mouse melanoma B۱۶F۰ cell lines with the MTT assay. The results of the MTT test revealed significant cytotoxic influences on cancer B۱۶F۰ cells (IC₅₀ value = ۲۵۸.۵ μg/mL) in comparison to normal cells

کلمات کلیدی:

corrosion, Stainless steel, aquatic plants

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