عنوان مقاله:

Optimization and Modeling of Advanced Oxidation of Dye Solution Using Response Surface Methodology

محل انتشار:

سومین کنفرانس سراسری نوآوری های اخیر در شیمی و مهندسی شیمی (سال: 1395)

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نویسندگان:

Abdollah Gholami Akerdi - *Department of Textile Engineering, Amirkabir University of Technology, Tehran, Iran*

S Hajir Bahrami - *Department of Textile Engineering, Amirkabir University of Technology, Tehran, Iran*

Mokhtar Arami - *Department of Textile Engineering, Amirkabir University of Technology, Tehran, Iran*

Elmira Pajootan - *Department of Textile Engineering, Amirkabir University of Technology, Tehran, Iran*

خلاصه مقاله:

The present research reports the photocatalytic degradation of anionic dye effluent using immobilized TiO2 nanoparticle on graphene oxide (GO) fabricated carbon electrodes. Acid Red 14 (AR 14) was used as model compound. Graphene oxide nanosheets were synthesized from graphite powder using modified Hummer's method. The nanosheets were characterized with field emission scanning electron microscope (FESEM) images, X-ray diffraction (XRD) and FTIR spectrum. The GO nanoparticles were deposited on carbon electrode (GO-CE) by electrochemical deposition (ECD) method and used as catalyst bed. TiO2 nanoparticles were fixed on the bed (GO-CE- TiO2) with thermal process. Response surface methodology (RSM) was applied to design the experiments, and the optimum operating parameters were determined for AR 14 removal. Operating factors and their effect on the dye removal such as pH, initial dye concentration, TiO2 dosage and time were studied. The dye removal required for treatment was optimized using RSM, and a regression equation was developed for AR 14 removal in a photocatalytic operation

کلمات کلیدی:

Photocatalyst, Graphene Oxide fabricated electrode, Decolorization, Nanoparticle, RSM, Anionic dye