عنوان مقاله:

Study on the degradation of dicofol via electrochemical oxidation process: simulation and validation

نویسندگان:

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خلاصه مقاله:

In this work, the preparation and characterization of an iridium coated titanium anode (Ti/IrO₂) and a ruthenium coated titanium anode (Ti/RuO₂) for dicofol (DZ) degradation is examined using the electrochemical oxidation process (EO). X-ray diffraction (XRD) and scanning electron microscope (SEM) are used to characterize the metal oxide-coated anodes. The operating parameters in EO, including current density, electrolyte (NaCl) dose, pH, and electrolysis time for the degradation of dicofol, are studied in detail. Box-Behnken response surface design (BBD) incorporated in response surface methodology (RSM) is used to optimize and model the dicofol degradation process. The dicofol degradation and electrical energy consumption are taken as responses. Numerical optimization is used to determine the optimal conditions (current density of ۰.۱ A/m۲, electrolyte dose of ۳.۵ mM, pH of ۷, and electrolysis time of ۸ min). Ninety-three percent of dicofol is degraded with an electrical energy consumption value of ۰.۷۵ KWh/m۳ using Ti/IrO۲ anode under optimal conditions.

کلمات کلیدی:

Dicofol, Electrochemical process, metal oxide coated anodes, Ti/IrO۲ and Ti/RuO۲, SEM

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