Electro Fenton oxidation for the removal of Rhodamine B from aqueous solution in a bubble column reactor under continuous mode

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ABSTRACT

Removal of hazardous dye, Rhodamine B, from aqueous solution using electrolytically generated Fenton technology in bubble column reactors (BCR) under continuous mode was investigated in the present study. BCR of capacity 3,000 mL was used for the electrolysis of 50 mg/L RhB solution. Ferric chloride was used as the Fenton catalyst and two graphite plates of effective area 100 cm² were used as the cathode. The effect of various operational parameters on dye removal behavior of the electro Fenton (EF) process was analyzed. Results after 8 hr of electrolysis showed that 98% of the dye was removed successfully at optimal conditions from the aqueous solution. The optimal solution pH, catalyst dosage, and applied voltage were obtained as 3, 5 mg/L, and 3.5 V, respectively. Experimental results demonstrated that EF process in BCR is effective for the removal of dyes from aqueous solution.

Keywords: Electro Fenton; Bubble column reactor; Dye removal; Rhodamine B; Advanced oxidation process

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