

研究论文

光电催化降解活性艳红K-2BP中电解质NaCl和Na₂SO₄的作用研究

杜琳¹, 吴进^{1,2}, 李桂英¹, 秦松¹, 胡常伟^{*,1}

(¹四川大学化学学院 绿色化学与技术教育部重点实验室 成都 610064)

(²四川省宜宾卫生学校 宜宾 644000)

收稿日期 2006-2-20 修回日期 2006-4-19 网络版发布日期 2006-12-27 接受日期 2006-8-26

摘要 以TiO₂/Ti为阳极, Ti网为阴极, 研究了活性艳红K-2BP在NaCl和Na₂SO₄电解质中的降解情况, 深入探讨了两种电解质在光电催化降解染料中的作用, 研究了电解质浓度、溶液pH值的影响, 并讨论了在混合盐电解质存在下, 活性艳红K-2BP的降解行为. 研究表明, 以NaCl为电解质时, Cl⁻会转化为氧化性很强的活性氯, 活性氯及光电的共同作用, 加速了染料的降解. 以Na₂SO₄为电解质时, SO₄²⁻在光电的作用下将发生两类反应, 一部分SO₄²⁻捕获光生空穴和HO•, 对光电催化降解染料起抑制作用; 另一部分SO₄²⁻将发生反应生成H₂O₂, 对染料降解起促进作用.

关键词 光电催化; 活性艳红K-2BP; TiO₂/Ti电极; 电解质

关键词 [光电催化](#) [活性艳红K-2BP](#) [TiO₂/Ti电极](#) [电解质](#)

分类号

Effect of Electrolytes NaCl and Na₂SO₄ on the Photoelectrocatalytic Degradation of Reactive Brilliant K-2BP

DU Lin¹, WU Jin^{1,2}, LI Gui-Ying¹, QIN Song¹, HU Chang-Wei^{*,1}

(¹ Key Laboratory of Green Chemistry and Technology (Sichuan University), Ministry of Education, College of Chemistry, Sichuan University, Chengdu 610064)

(² Yibin Health School, Yibin 644000)

Abstract Cl⁻ and SO₄²⁻ are the most common inorganic ions in dye polluted water. The effect of these ions on the photoelectrocatalytic degradation of the reactive brilliant K-2BP using TiO₂/Ti as anode is investigated. It is found that the concentration of the electro-lyte, the acidity of the solution and the use of mixed electrolytes alter the degradation process. When NaCl is used as the electrolyte, active chlorine is formed during the process, and is found to be responsible in combination with photo- and electro-effects for the degradation of dye; while Na₂SO₄ is used as electrolyte, two categories of reactions will occur. SO₄²⁻ may trap HO• and h⁺, thus the efficiency of degradation is reduced. Under the conditions investigated, SO₄²⁻ ion may also catalyze the formation of hydrogen peroxide, which is active for the degradation, and then the degradation is favored.

Key words [photoelectrocatalysis](#) [reactive brilliant K-2BP](#) [TiO₂/Ti electrode](#) [electrolyte](#)

DOI:

通讯作者 [胡常伟 gchem@scu.edu.cn](mailto:gchem@scu.edu.cn)

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