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论文

隔膜式电解槽生物膜阴极降解苯酚的过程及其条件的优化

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摘要:

以炼油废水中的主要污染物苯酚为目标污染物, 采用不同生物膜电极反应器对苯酚进行降解, 从而寻找出降解苯酚的最佳反应途径. 研究结果表明, 运用隔膜式电解槽生物膜阴极区域对苯酚废水进行处理, 其苯酚的去除效果虽然没有在生物膜阴极与阳极相混合的混合式反应器中处理效果好, 但在18 h内苯酚浓度降解到0, 并且其化学需氧量(COD)去除率最高, 在16 h内COD去除率达到80%. 对于隔膜式电解槽生物膜阴极区域的降解条件优化后发现, 电流设定为5 mA, 初始苯酚质量浓度低于200 mg/L, 温度为35 ℃时, 苯酚降解效果最佳.

关键词: 生物膜阴极 苯酚 化学需氧量 电流

Process of Phenol Degradation in a Divided Electrolytic Cell with Biofilm-cathode and Optimization of Conditions

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Abstract:

Phenol is one of the main components of the wastewater from crude oil refineries and it is used for the target contamination degraded in this paper. A key method for the treatment of wastewater from crude oil refineries was developed by different biofilm-electrode reactors. The results indicate that phenol degradation rate in the biofilm-cathode of the biofilm-electrode reactor in a divided electrolytic cell is no better than the biofilm-electrode reactor in an undivided electrolytic cell. However, phenol degradation rate is 0 after 18 h reaction and the removal rate of chemical oxygen demand(COD) is 80% after 16 h reaction in the biofilm-cathode of the biofilm-electrode reactor in a divided electrolytic cell. The conditions of the phenol degradation in the biofilm-cathode of the biofilm-electrode reactor in a divided electrolytic cell were optimized. It is shown that the best conditions of the phenol degradation on the biofilm-cathode in the biofilm-electrode reactor of an divided electrolytic cell are current at 5 mA, phenol mass concentration at a lower one than 200 mg/L and the temperature at 35 ℃.

Keywords: Biofilm-cathode Phenol Chemical oxygen demand(COD) Current

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