



## 论文摘要

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## 高分子聚胺PED的合成及废水硫酸根的吸附性能

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**摘要:**以环氧氯丙烷和二乙烯三胺反应合成1种高分子聚胺(以下简称PED),采用FTIR, DSC-TG, EDX和SEM等方法对产物进行结构表征,并考察合成的高分子聚胺PED水溶液中硫酸根离子的脱除能力。研究表明:聚合产物PED热稳定性随产物氨基含量增加而增大,热分解温度可达285 °C;产物PED对硫酸根有很强的脱除能力,其中,产物投加量的增加和酸性条件均有利于硫酸根脱除率的提高;在中性和酸性溶液中(硫酸根离子质量浓度为2.0 g/L),产物脱除硫酸根达到平衡的时间分别为30 min和10 min;当反应时间为30 min时,在中性和酸性水溶液中硫酸根脱除率分别可达90.2%和99.6%,产物吸附量分别为175 mg/g和191 mg/g;处理后水溶液中硫酸根离子质量浓度降为196 mg/L和8 mg/L,均远低于国家生活饮用水卫生标准的250 mg/L (GB 3838—2002)要求。

**关键字:** 环氧氯丙烷; 二乙烯三胺; 硫酸根; 吸附性能

## Synthesis of polyamine macromolecule PED and its adsorption in sulfate wastewater

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**Abstract:** Polyamine macromolecule PED was synthesized by condensation polymerization of epichlorohydrin and diethylenetriamine. As-prepared granule of PED was characterized by FTIR, DSC-TG, EDX, SEM and the sulfate removal performance of PED in aqueous solutions was studied. The results show that thermo-stability of the products increases with the increase of amine content, and the decomposition temperature can reach 285 °C. The sulfate removal capability of PED is strong. The process equilibrium time is 30 min and 10 min respectively in neutral and acidic aqueous solutions containing 2.0 g/L sulfate ions. When the reaction is kept for 30 min, the removal ratio of sulfate ions can reach 90.2% and 99.6% in neutral and acidic solutions with the absorption capacity 175 mg/g and 191 mg/g, respectively, while the sulfate concentrations of the filtrate are 196 mg/L and 8 mg/L, respectively, which are both lower than the demand of 250 mg/L of GB 3838—2002.

**Key words:** epichlorohydrin; diethylenetriamine; sulfate ions; adsorption performance

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