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论文

焦化中水中主要有机污染物在焦煤上的竞争吸附

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摘要：

采用紫外分光吸光度-联立方程法检测焦化废水混合模拟废水浓度，以二级出水中主要有机污染物——苯酚、吡啶、喹啉和吲哚为例，分析对比单一与同时竞争吸附下焦煤煤粉对焦化废水中主要有机污染物的吸附容量与吸附速率。研究表明：在竞争吸附中，吸附容量的顺序为苯酚>喹啉>吲哚>吡啶；混合体系焦煤煤粉的总吸附量与单组分体系吸附量之和基本相等。焦煤吸附喹啉可以用多分子层吸附模型描述，吸附苯酚、吡啶和吲哚属于单分子层吸附模型。吡啶和吲哚吸附稳定，不受其它组分浓度变化影响；苯酚不稳定，与喹啉存在吸附质间作用，有直接的吸附位点竞争。在竞争吸附中焦煤吸附苯酚、吡啶、喹啉和吲哚二级动力学模型比一级动力学模型有更好的回归效果。

关键词： 焦化中水回用；竞争吸附；苯酚；喹啉；吲哚；吡啶

Competitive adsorption of main organic pollutants from coking wastewater on coking coal

Abstract:

Using ultraviolet spectrophotometry absorbency simultaneous equations method to detect the concentration of coking wastewater mixed simulated wastewater.Took the phenol，pyridine，quinoline and indole which were main organic pollutants in the effluent of secondary sedimentation tank as example.The adsorption capacity and adsorption rate of the major organic pollutants from coking wastewater on coking coal by single adsorption were analyzed and compared with competitive adsorption.The results show that the order of adsorption capacity in the sequence is phenol> quinoline> indole> pyridine in the competitive adsorption.The total adsorption capacity on coking coal mixed system is approximately equal with the adsorption capacity of the single component system.The adsorption of quinoline on coking coal can be described by multi molecular layer.The adsorption of phenol，pyridine and indole on coking coal are identified to be a mono molecular layer adsorption model.Pyridine and indole absorption are steady and not influenced by the concentrations of other components.The adsorption of phenol is unsteady，which has a adsorbate behavior with quinoline and a direct adsorption site competition.In the competitive adsorption，the second order kinetic model of phenol，pyridine，quinoline and indoles are fit more well than first order kinetics model.

Keywords: coking wastewater reuse;competitive adsorption;phenol;quinoline;indole;pyridine

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