

ADSORPTION OF PHENOL FROM AQUEOUS SOLUTION ON ACTIVATED CARBONS ACCORDING TO OXIDATION STABILIZATION CONDITION

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Introduction

In modern society, which is engaged in consumer life and industrial activities, various wastewater is produced as a by-product of material civilization activities. Among them, phenol is referred as serious pollutant. Phenol and its derivatives are organic substances used as raw materials or solvents in industries such as coke gas, paint, plastics, textiles, wood processing, paper, pharmaceuticals, steelmaking, and oil refining¹. It causes taste and smell even if only 2.5 µg / L exists in water. Phenol also destroys aquatic ecosystems due to its toxicity and requires dissolved oxygen during biological degradation, resulting in depletion of dissolved oxygen in the river water, resulting in adverse effects on water quality².

Materials and Methods

Activated carbon was prepared from inexpensive pitch. To produce a value added product from pitch, it is proposed to convert it to activated carbon. Also, activated carbon derived from pitch showed remarkable efficiency for the removal of phenol from aqueous solution. Thus the suitability of the activated carbon prepared from pitch for phenol adsorption was assessed. The equilibrium and kinetic data of the adsorption were then studied to understand the adsorption process.

Results and Discussion

Fig. 1 shows the results of SEM-EDS line scanning analysis of the oxygen penetration tendency according to different temperature of oxidation stabilization.

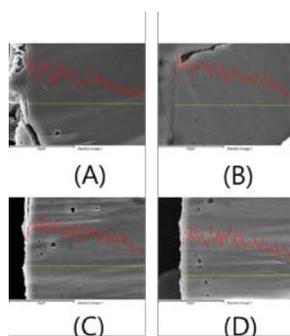


Fig.1. Oxygen penetration tendency according to different temperature of oxidation stabilization:
(A) IP270, (B) IP300, (C) IP330, (D) IP360

Conclusions

To produce a value added product from pitch, it is proposed to convert it to activated carbon. Activated carbons were fabricated through steam activation process. And Activated carbon derived from pitch showed remarkable efficiency for the removal of phenol from aqueous solution. Phenol removal of the prepared activated carbon was 79%.

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