



BIOSORPTION OF PHENOL BY *Pseudomonas aeruginosa* BIOFILM FIXED ON GRANULAR ACTIVATED CARBON

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Abstract

Biological activated carbon (BAC) filter has been shown to be effective in removing phenol from water using both adsorption and biodegradation removal mechanisms; however, little is known regarding which removal mechanism predominates and to what extent. In this paper the ability of the biosorption system to eliminate phenol by increasing the capacity of granular activated carbon was investigated. The two following systems were operated parallel to explore the optimum condition: bacterial biofilm of *Pseudomonas aeruginosa* ATCC27853 supported on granular activated carbon column and granular activated carbon column. Experimentally, the two columns were operated in continuous system at an inlet flow rate of $5\text{mL}\cdot\text{mn}^{-1}$. The effects of bed height and initial phenol concentration have been discussed by using Walker and Weatherley work. An increasing of both parameters involves an increase of the growth rate which reaches a maximum value of 0.106h^{-1} and 0.0646h^{-1} at an initial concentration of $0.7\text{kg}\cdot\text{m}^{-3}$ and at 4.5cm bed height respectively.

Key words: activated carbon, adsorption, biosorption, mathematical model, phenol, *Pseudomonas aeruginosa*

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