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## **IMMOBILIZATION OF THE DEAD FUNGAL BIOMASS FOR THE TREATMENT OF COLORED WASTEWATER**

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### **Abstract**

Fungal dead biomass has been immobilized to produce immobilized biosorbent for the removal of dyes, since the native biomass based biosorbents have poor engineering properties. Four types (KI1, KI2, KI3 and KI4) of immobilized biosorbents were prepared employing varying amounts of PVA (g) and powdered *Fomitopsis carnea* (g) (5 : 0.25 for KI1, 5 : 5 for KI2, 8 : 4 for KI3, and 8 : 8 for KI4). Most efficient immobilization matrix was selected to for the production of the immobilized biomass. The chemical stability of the immobilized biomass was evaluated in different chemical environments using HCl, H<sub>2</sub>SO<sub>4</sub>, EDTA and Acetic acid. Kinetics and equilibria studies were conducted for both virgin and immobilized biosorbents.

The immobilized biosorbent showed excellent chemical and mechanical stability. Langmuir and Freundlich isotherm models could well describe the experimental sorption equilibrium data of the virgin and immobilized biosorbent. Langergren's model exhibited better correlation ( $R^2$ : 0.858 to 0.980) with experimental kinetic data than Pore diffusion model ( $R^2$ : 0.033 to 0.978). Sorption capacity of immobilized biomass varied from 1250.00 mg/g to 833.33 mg/g by changing the PVA and biomass concentration from 5 : 0.25 for KI1 to 8 : 8 for KI4.

*Keywords:* biosorption, immobilization, sorption capacity, isotherm and kinetic models

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