

Use of Polysulfone-Immobilized *Corynebacterium glutamicum* to Study the Competitive Biosorption of Reactive Black 5 and Reactive Orange 16

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Corynebacterium glutamicum, a lysine fermentation industry waste, showed promise for the removal of reactive dyes from aqueous solution. Due to practical difficulties in solid-liquid separation and poor mechanical stability, the free biomass was immobilized using polysulfone. Thus produced, polysulfone-immobilized *C. glutamicum* was used to study the competitive biosorption of Reactive black 5 and Reactive orange 16. The pH edge experiments revealed that strong acidic conditions are mandatory to achieve maximum reactive dye biosorption. Amine groups of *C. glutamicum* were responsible to accommodate negatively charged reactive dye anions through electrostatic interaction. Hence the competition between the two reactive dyes in occupying the amine groups will be explored on the basis of molecular weight, number of sulfonic groups, reactivity of each dye, etc. Isotherm experiments will be conducted to explore the saturation potential of the biosorbent. Multicomponent modeling will be attempted using Langmuir model with a constant interaction factor and multicomponent Freundlich model.