

## Chemical Engineering Transactions

Kinetics and isotherms of a genetically engineered *saccharomyces cerevisiae* EBY100 strain expressing palladium binding peptides for the biosorption of Pd (II) in a batch reactor

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### Abstract

Palladium is a rare platinum group metal concentrated in the Earth's core and mantle; because of its scarcity, its waste recovery and reuse options are economically appealing. Traditional strategies for extracting PGMs from effluents have a variety of flaws, prompting researchers to search for novel methods. One such method is biosorption. A novel biosorbent in the form of a genetically engineered strain of *Saccharomyces cerevisiae* EBY100 has been developed for the biosorption of palladium in aqueous solution. The genetically modified *Saccharomyces cerevisiae* EBY100 strain was created to display palladium-binding peptides on its surface. The purpose of this study was to characterize the adsorption of Pd(II) by a genetically modified strain of *Saccharomyces cerevisiae* EBY100 in a batch reactor using isotherm and kinetic studies. The maximum adsorption capacity of transformed *S.cerevisiae* EBY100 cells for Pd(II) ions was found to be 125 mg/g; adsorption was found to be best described by the Freundlich isotherm and pseudo-second order models.