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Study of Adsorption Isotherm Models on Rare Earth Elements Biosorption for Separation Purposes

Authors : Nice Vasconcelos Coimbra, Fábio dos Santos Gonçalves, Marisa Nascimento, Ellen Cristine Giese

Abstract : The development of chemical routes for the recovery and separation of rare earth elements (REE) is seen as a priority and strategic action by several countries demanding these elements. Among the possibilities of alternative routes, the biosorption process has been evaluated in our laboratory. In this theme, the present work attempts to assess and fit the solution equilibrium data in Langmuir, Freundlich and DKR isothermal models, based on the biosorption results of the lanthanum and samarium elements by Bacillus subtilis immobilized on calcium alginate gel. It was observed that the preference of adsorption of REE by the immobilized biomass followed the order Sm (III)> La (III). It can be concluded that among the studied isotherms models, the Langmuir model presented better mathematical results than the Freundlich and DKR models.

Keywords : rare earth elements, biosorption, Bacillus subtilis, adsorption isotherm models
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