



## Biosorption of Basic Blue 41 from aqueous solutions by *Posidonia oceanica*: Application of two-parameter and three-parameter isotherm models

L. Brahmi, F. Kaouah\*, T. Berrama, S. Boumaza, Z. Bendjama

Laboratoire des sciences de génie des procédés industriels, Faculté de Génie Mécanique et de Génie des Procédés, USTHB, BP 32, El-Alia, 16111 Bab-Ezzouar, Alger (Algérie), Tel. +213 666 474 025; email: [lamiabr12@hotmail.fr](mailto:lamiabr12@hotmail.fr) (L. Brahmi), Tel. +213 558 428 259; email: [faridakaouah@yahoo.fr](mailto:faridakaouah@yahoo.fr) (F. Kaouah), Tel. +213 553 979 481; email: [tarek\\_ber@yahoo.fr](mailto:tarek_ber@yahoo.fr) (T. Berrama), Tel. +213 779 869 856; email: [boumzasalim2006@yahoo.fr](mailto:boumzasalim2006@yahoo.fr) (S. Boumaza), Tel. +213 556 613 844; email: [zbendjama@yahoo.fr](mailto:zbendjama@yahoo.fr) (Z. Bendjama)

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### ABSTRACT

Batch biosorption experiments were carried out for the removal of basic dye, Basic Blue 41, from aqueous solution using marine biomass *Posidonia oceanica*. A series of assays were undertaken to assess the effect of the systems variables (solution pH, biomass amount, and dye concentration). The highest dye removal yield was achieved at pH 8–11 (i.e., maximum adsorption capacity of 225.48 mg g<sup>-1</sup>). The minimum sorbent concentration experimentally found to be sufficient to reach the total removal of dye molecules from aqueous solution was 0.4 g L<sup>-1</sup>. The equilibrium biosorption isotherms and kinetics were investigated. The equilibrium data were fitted using three two-parameter models (Langmuir, Freundlich, and Temkin) and two three-parameter models (Sips and Toth). Langmuir and Sips equations provided the best model for BB41 biosorption data. Kinetic studies indicated that the kinetics of the biosorption of BB41 onto *P. oceanica* follows a pseudo-second-order model. In addition, an exhaustive comparative study was done to situate this marine biomass among other proposed sorbents.

*Keywords:* Biosorption; *Posidonia oceanica*; Basic Blue (BB) 41; Modeling

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\*Corresponding author.

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