Adsorción de azul de metileno sobre cascarilla de arroz [

Área Metropolitana del Valle de Aburra :
Corporación Universitaria Lasallista,
2012

text (article)

Analítica

Introduction. The contamination produced by the download of industrial effluents, especially from textile, food and paint industries, not only affects ecosystems due to its aesthetic degradation, but, above all, to the reduction of photosynthetic processes. Dyes, due to their aromatic structure, are characterized by their difficult and slow degradation, thus generating accumulations and becoming a contamination source that can even be carcinogenic for some molecules. Adsorption on agricultural wastes appears as an innovative alternative, environmentally favorable and very efficient to treat those dyed effluents. Objective. To find the conditions which allow an efficient removal of the methylene blue dye on rice hulls by the use of the statistical design of experiments and compositionally and structurally analyze the adsorbent material. Materials and methods. The best conditions of the adsorption process were determined under a discontinuous system, evaluating an interval of the variables pH value, dosage of the adsorbent, dye concentration and contact time. The temperature, the agitation and the size of the particles were constant. The dye content was quantified by the use of Ultraviolet-Visible spectrophotometry. Results. A maximum removal of 99% was obtained at pH 9.0, 3.5 mgL-1dosage, 10 mgL-1of concentration and 163 minutes of contact time, with a good adjustment to the statistical models (R2 = 0.92) and with no bias in the measuring. Conclusions. The statistical design was useful to establish the conditions necessary to achieve a high efficiency to remove the methylene blue dye on rice hulls. It also proved that this agricultural waste is a remarkable material to scale the process in a later phase
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Editorial: Área Metropolitana del Valle de Aburra Corporación Universitaria Lasallista 2012

Tipo Audiovisual: adsorción azul de metileno cascarilla de arroz efluentes coloreados diseño factorial análisis de superficie adsorption methylene blue rice hulls dyed effluents factorial design surface analysis adsorção azul de metileno cáscara de arroz efluentes coloridos desenho fatorial análise de superfície

Documento fuente: Producción + Limpia, ISSN 1909-0455, Vol. 7, Nº. 1, 2012, pags. 9-18

Nota general: application/pdf

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Lengua: Spanish

Enlace a fuente de información: Producción + Limpia, ISSN 1909-0455, Vol. 7, Nº. 1, 2012, pags. 9-18

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