

Physico-Chemical Characterization of an Algerian Biomass: Application in the Adsorption of an Organic Pollutant

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Abstract : The objective of this work is to study the retention of methylene blue (MB) by biomass. The Biomass is characterized by X-ray diffraction (XRD), infrared absorption (IRTF). Results show that the biomass contains organic and mineral substances. The effect of certain physicochemical parameters on the adsorption of MB is studied (effect of the pH). This study shows that the increase in the initial concentration of MB leads to an increase in the adsorbed quantity. The adsorption efficiency of MB decreases with increasing biomass mass. The adsorption kinetics show that the adsorption is rapid, and the maximum amount is reached after 120 min of contact time. It is noted that the pH has no great influence on the adsorption. The isotherms are best modelled by the Langmuir model. The adsorption kinetics follow the pseudo-second-order model. The thermodynamic study of adsorption shows that the adsorption is spontaneous and exothermic.

Keywords : dyes, adsorption, biomass, methylene blue, langmuir

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