

Removal of Astrazon Yellow 7GL from aqueous solutions by adsorption on to waste wood powder

Taibi Kamel

University of Sciences and Technology Houari Boumediene, Algeria

Various treatments technologies have been developed for the purification of wastewater contaminated by dyes. Among all methods, the adsorption is a cost-effective technique and simple to operate. The present studies explore the applicability of waste wood powder (WP) as adsorbents for the removal of a hazardous coloring agent, Astrazon Yellow 7GLL (BY), from aqueous solution. Basic yellow dye was classified as toxic colorant. As a result, improved and profitable technologies are required to remove it from textile effluents. Two important aims are reached: The contribution in treatment of colored effluent caused by the textile industry and the valorization of vegetable biomass. The wood powder (WP) was analyzed using a JEOL JSM6830 scanning electron microscope and the Fourier transform spectrometer of Perkin Elmer type "spectrum one". Various parameters were studied: Influence of the stirring, pH analysis, effect of contact time and initial dye concentration, and effect of solid/liquid ratio. From the pH 4, maximum of removal percentage can be reached. The percentage color removal decreased from 78.64% to 58.77% as the initial concentration varies from 25 to 50 mg/L. In order to correlate the experimental results, three adsorption isotherms models were used in the present study. The removal efficiency of BY increases as the solid/liquid ratio. Q_{max} calculated from the Langmuir isotherm was 95.24mg.g⁻¹ for the optimal conditions. A comparison between kinetic models is presented to highlight the type of mechanism of diffusion.

Biography

Taibi Kamel completed his Ph.D. in 2000 from Grenoble University (France). He is Head of group of research (Laboratory of Sciences and Material Engineering, Algiers University). He works in the following specialties: Material properties, spectroscopy, and crystallography. His research works are published by around fifty publications and international communications. He was also a supervisor of about thirty engineers, masters and doctorates.

kameltaibi@yahoo.fr