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CELLULOSE CELLETS AS NEW TYPE OF ADSORBENT FOR THE REMOVAL OF DYES FROM AQUEOUS MEDIA

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Abstract

In the current study, the structural and adsorptive properties of the micro crystalline cellulose beads, Cellets 200 and 350, as well as the possibility to use them as adsorbents for removal of reactive dye Brilliant Red HE-3B and cationic dye Methylene Blue from aqueous solutions have been investigated. Batch experiments were conducted to study the effect of adsorbent particles size (200-500 μm), initial solution pH (1-11), adsorbent dose, dye concentration, temperature (2-45⁰C) and contact time (30 min – 24 hours). It was observed that the optimum values of experimental parameters and the maximum amount of dye adsorbed onto cellulose were dependent on the type of dye. The results of the study suggest the adsorption capacity of the investigated materials for removal of dyes from aqueous environment strongly depends on the structure of dyes and the working conditions. At the same time, further research regarding the study of adsorption equilibrium is encouraged in order to gain useful information for extending the process at a large scale, and also for applying the process for adsorption of some inorganic species, such as metallic ions.

Key words: adsorption, aqueous medium, cationic dye, cellulose CELLETS, operating variables, reactive dye

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