

Adsorption of Reactive Dyes from Aqueous Solution on Crosslinked Chitosan-Epichlorohydrin Beads

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The textile industry consumes a significant volume of water in the process of dyeing fibers and fabrics. This water is highly colored due to the presence of dyes and can affect the photosynthesis process due to the occurrence of reduced water transparency, which makes the penetration of sun rays more difficult. Although many organic molecules are degradable, many others are stable and, due to their complex chemical structures and synthetic organic origin, are not totally degradable.

The adsorption of reactive dyes on crosslinked chitosan-epichlorohydrin beads was investigated. Chitosan-epichlorohydrin beads were characterized by Fourier transform infrared spectroscopy (FTIR), surface area and pore size analyses, and scanning electron microscopy (SEM). Batch adsorption experiments were carried out and optimum reactive dyes adsorption on chitosan-epichlorohydrin beads occurred in terms of pH and temperature. Agitation rate of 400rpm and contact time of 2 hr. Adsorption equilibrium isotherms were analyzed by Langmuir, Freundlich and Sips models.