

P17. DECOLORIZATION OF TOXIC DYES FROM AQUEOUS SOLUTIONS WITH CHITOSAN COMPOSITE BEADS

Seda ÇINAR, Tülin AYDEMİR, Ahmet ESER, Ayşe DİNÇER

Celal Bayar University, Faculty of Science and Arts, Chemistry Department 45140 MANISA

Nowadays, the unaesthetic look of dyes and their toxicological effects have drawn considerable attention toward the contamination caused by industrial effluents. The disposal of dye effluents has always been a major problem to solve and in the past many methods dealing with color removal in textile effluents have been tested. Various methods for removal of toxic dyes from wastewaters have been reported in the literature.

Chitosan is well established as an excellent natural adsorbent because its amine ($-NH_2$) and hydroxyl ($-OH$) groups may serve as coordination sites to form complexes with various effluent. In recent years, a great number of studies on chitosan biosorbents for dye removal have demonstrated.

In this study, cross linked chitosan beads were used to remove dyes from aqueous solution in batch adsorption system. Erythrosine was selected as a model dye. Morphology of the chitosan beads were discussed using SEM FTIR and TGA analysis. Several important parameters influencing the adsorption of Erythrosine such as contact time, pH, temperature, and dye concentration were investigated systematically by batch experiments. Optimum contact time for equilibrium to be achieved is found to be 3 hours. Maximum adsorption capacity of dye was observed at pH 3.5 and 30°C and calculated as 35.83 mg/g. The obtained results showed that the equilibrium adsorption behavior of Erythrosine on chitosan beads can be applied to the Langmuir model. Thermodynamic parameters, change in free energy, enthalpy and entropy were also evaluated, indicating that the adsorption of Erythrosine was spontaneous and endothermic in nature.

*sedacin@yahoo.com