

Abstract

The ability of cyclodextrins to facilitate inclusion of chemical molecules can be exploited to obtain new adsorbent materials for organic pollutants removal such as synthetic dyes from wastewater. In this work we report a study on the formation of the complex acrylamidomethylated- β -cyclodextrin, then on the grafting on cellulosic polymer. The grafting is initiated by ceric ions Ce (IV) and confirmed by infrared analysis (FTIR). Scanning electron microscopy (SEM) analysis was carried out to evaluate properties of structure and surface of grafted polymers. The experiments of balance adsorption of reactive, acid, and cationic dyes were made in aqueous solutions for 24 h at pH: 3, 6 and 11. Our results indicate formation of a permanent chemical bond between β -cyclodextrin and polymer materials. The cellulosic polymers can effectively be modified without significant change in the structural properties. In addition, absorption tests showed that the grafted functions clearly improve retention of liquids by cellulose. The results of dye adsorption in aqueous medium show the ability of modified polymer to fix organic dyes, and to be used in the industrial liquid waste processing. Differences in adsorption capacities may be due to the effect of dye structure