

ABSTRACT

EVALUATION OF PREPARATION, CHARACTERIZATION AND SURFACE ADSORPTION STUDIES of CHEMICAL CROSSLINKED ACRYLAMIDE POLYMERIC COMPOSITES BASED 2-ACRYLAMIDO-2-METHYL-1-PROPANE SULFONIC ACID, SODIUM CARBOXYMETHYL CELLULOSE and MONTMORILLONITE

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In this study, acrylamide monomer and 2-acrylamido-2-methyl-1-propane sulfonic acid as a comonomer and in order to form a composite structure with carboxymethyl cellulose as a naturel polymer and montmorillonite as a clay mineral have been synthesized for the production of chemically crosslinked copolymers. Hydrogel systems were prepared by free radical polymerization in aqueous solution using poly(ethylene glycol) diacrylate as a crosslinker. Structural characterization of prepared chemically crosslinked polymers were tried to determine by using Fourier Transform Infrared Spectroscopy (FT-IR). Scanning Electron Microscopy (SEM) micrographs were taken for determination of surface porosity of hydrogels. Dynamic swelling tests were applied at 25°C for the purpose of investigation of swelling properties of crosslinked copolymers. According to obtained data, parameters concerning swelling kinetics and diffusion mechanism were calculated. A cationic dye such as lauths violet was selected as model molecule to investigate of adsorption properties of hydrogels. It was determined that crosslinked copolymers adsorbed dye of lauths violet from aqueous solutions in high level.

Key words: Acrylamide, carboxymethyl cellulose, montmorillonite, hydrogel, composite, adsorption, lauths violet.