

ABSTRACT

SYNTHESIS, CHARACTERIZATION AND INVESTIGATION OF SORPTION PROPERTIES OF ACRYLAMIDE BASED NOVEL CATIONIC HYDROGELS

Gözde ÇETİN

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Supervisor: Assoc.Prof.Dr. Ömer Barış ÜZÜM
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In this study, it was aimed that produce a new polymeric carrier/sorbent hydrogels and semi-IPNs by using acrylamide which is commonly used to produce crosslinked polymer. Hydrogels and semi-IPNs were prepared by free radical polymerization in aqueous solution using (3-acrylamidopropyl)trimethyl ammonium chloride as comonomer, poly(ethylene glycol) diacrylate and poly(ethylene glycol) dimethacrylate as crosslinkers. Poly(ethylene glycol) were used to synthesis semi-IPN structure. 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 and semi-IPNs. 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. An anionic dye such as calconcarboxylic acid was selected as model molecule to investigate of adsorption properties of hydrogels and semi-IPNs. It was determined that crosslinked copolymers have swelling capacity in water and they adsorbed dye of calconcarboxylic acid from aqueous solutions in high level.

Key words: Acrylamide, hydrogel, (3-acrylamidopropyl)trimethyl ammonium chloride, interpenetrating polymer network, poly(ethylene glycol), sorption, Calconcarboxylic acid