ABSTRACT

M.Sc. Thesis

PREPARATION, CHARACTERIZATION AND INVESTIGATION OF BIO-POTENTIAL USING CAPACITY OF CHEMICALLY CROSSLINKED ACRYLAMIDE/SODIUM METHACRYLATE COPOLYMERS

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In this study, it was aimed that synthesis of chemically crosslinked copolymers by using acrylamide as monomer with sodium methacrylate, characterization and the investigation of bio-potential using capacity of synthesized polymers. Chemically crosslinked acrylamide/sodium methacrylate polymer were prepared by free radical polymerization in aqueous solution using 1,4-butanediol dimethacrylate, ethylene glycol dimethacrylate and trimethylolpropane triacrylate as crosslinkers. Ammonium persulphate as initiator and *N,N,N′,N′*-tetramethylethylenediamine as accelerator were used in the reaction.

Structural characterization of chemically crosslinked polymers was made by Fourier Transform Infrared Spectroscopy (FT-IR) analysis. Dynamic swelling tests were applied at 25^{o}C for swelling characterization in water and solution of urea for the purpose to sample of biopotential usage areas of crosslinked acrylamide/sodium methacrylate copolymers. Parameters about swelling kinetics and diffusion mechanism were calculated by using of the results of swelling studies.

Safranin T was selected as model molecules to investigate adsorption properties of chemically crosslinked acrylamide/sodium methacrylate polymers. Adsorption

properties were investigated by interacting of chemically crosslinked acrylamide/sodium methacrylate polymers samples with Safranin T until equilibrium at 25^{o}C.

KEY WORDS: Acrylamide, crosslinking, hydrogel, sodium methacrylate, ürea, swelling, adsorption, Safranin T.