

## ABSTRACT

### **PREPARATION, CHARACTERIZATION and INVESTIGATION of BIOPOTENTIAL USING CAPACITIES of NEW ACRYLAMIDE/POTASSIUM 3-SULFOPROPYL METHACRYLATE HYBRIDE HYDROGELS CONTAINING SODIUM ALGINATE and BENTONITE**

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In this study, acrylamide monomer and potassium 3-sulfopropyl methacrylate as a comonomer and in order to form a composite structure with sodium alginate as a natural polymer and bentonite 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/Attenuated Total Reflectance (FT-IR/ATR). SEM micrographs were taken for determination of surface porosity of hydrogel systems. Dynamic swelling tests were applied at 25°C for the purpose of investigation of swelling properties of crosslinked hybrid hydrogels and semi-IPN hydrogels. According to obtained data, parameters concerning swelling kinetics and diffusion mechanism were calculated. A cationic dye such as lauths violet (thionin) was selected as model molecule to investigate of adsorption properties of hydrogels. It was determined that crosslinked hybrid hydrogels and semi-IPN hydrogels have adsorbed dye of lauths violet from aqueous solutions in high level.

**Key words:** Acrylamide, potassium 3-sulfopropyl methacrylate, sodium alginate, clay, bentonite, hydrogel, composite, adsorption, lauths violet.