



OPTIMIZATION OF PARAMETERS FOR SYNTHESIS OF ALGINATE BASED HYDROGELS

Jelena Tanasić, Marija Krstić, Vesna Svrkota, Ivan Ristić

Faculty of Technology Novi Sad, University of Novi Sad, Bulevar cara Lazara 1, 21000 Novi Sad,
Serbia

e-mail: jelenatanasic@uns.ac.rs

ABSTRACT

Hydrogels represent a special class of polymer networks that are elastic and swell in water, but do not dissolve in it. The hydrophilic structure makes hydrogels capable to absorb large amounts of water in their three-dimensional networks. The most important property of hydrogels is swelling, which depends on the nature of the polymer, the degree of crosslinking, the charge density, but also the environmental conditions. In the last five decades, hydrogels that change their volume and structure as a result of respond to external stimuli such as pH, temperature, ionic strength, electric, magnetic field have been intensively studied. In this work, hydrogels sodium alginate-based with the addition of chitosan were synthesized. The proportions of chitosan were changed in relation to alginate in order to examine their influence on the production of hydrogels. It was obtained at high temperature. After the synthesis, the samples were dried and then subjected to characterization by infrared spectroscopy with Fourier transformation (FTIR), differential scanning calorimetry (DSC) and degree of swelling. These hydrogels have potential application as biomaterials for many medical applications (in systems for targeted drug delivery, wound healing, tissue engineering), in water purification systems, and in systems where high water absorption capacity is required.

Keywords: hydrogels, alginate, polymer crosslink