

Chitosan based hydrogels for textile application

S. Vilchez¹, E. Puso¹, M. Porras², J. Esquena¹, A. Navarro³, P. Erra¹

¹Department of Surfactant Technology, IIQAB-CSIC, c/ Jordi Girona, 18-26, 08034 Barcelona, Spain

²Department of Chemical Engineering, University of Barcelona, c/ Martí i Franquès, 1, 08028 Barcelona, Spain

³Department of Chemical Engineering, Universidad Politécnica de Catalunya, c/Colon, 1, 08222 Terrassa, Spain

Hydrogels are hydrophilic three-dimensional polymer networks capable of adsorbing a large volume of water or other biological fluids. The biopolymer chitosan, poly(1,4)-2-amino-2-deoxy-β-D-glucan, usually obtained by deacetylation of chitin is widely present in the nature as a component of some fungi, exoskeleton of insects and marine invertebrates. This polysaccharide has several useful properties, such as non-toxicity, biocompatibility, biodegradability, antimicrobial activity (1) and chemical reactivity (2). Chitosan is soluble in acidic medium and then chitosan hydrogels are often crosslinked to give stability to their structure. Chitosan hydrogels can be obtained by various mechanisms of chemical or physical crosslinking such as covalent (3), ionic (4), hydrogen bonding (5) or hydrophobic association (6). In this study chitosan/acrylic acid hydrogels were synthesized to apply them on textiles to confer new properties. The physico-chemical properties, such as rheological analysis, stability at different pH's and temperature, and water absorption capacity were studied. The morphology was determined by scanning electron microscopy on freeze dried hydrogels.

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