

Abstract

In recent years, designing new materials in nanoscale have been found more attention due to their wide applications in many fields. Among these materials, cellulose nanoparticles which readily bind to organic and polymeric materials have been mostly investigated. In this study, cellulose nanoparticles were firstly prepared from filter paper Whatman No.1 by acidic hydrolysis with concentrated sulfuric acid. Then, the cellulose nanoparticles were used to synthesize a new bionanocomposite based on chitosan and poly vinyl alcohol. The shape and size of particles into this new nanocomposite were studied by field emission scanning electron microscope, X-ray diffraction analysis and Fourier transform infrared spectrophotometer. According to X-ray diffraction, the size of prepared nanocellulose particles was found to be about 11 nm. The Field emission scanning electron microscope images show favored rod shapes for synthesized cellulose nanoparticle.

Key words : Bionanocomposite, Cellulose, Chitosan, Poly vinyl alcohol



University of Zabol

Graduate school

Faculty of Science

Department of Chemistry

**The Thesis Submitted for the Degree of M.Sc (in the field of
Organic Chemistry)**

**Preparation and Characterization of a
Bionanocomposite based on Poly
vinylalcohol/Chitosan/Cellulose**

Supervisor:

Dr. A. R. Samzadeh Kermani

Advisers:

Dr. M. Ghaffari Moghadam

Y. Gharayebi

By:

N. Esfandiary

October 2013