ABSTRACT SUBMISSION

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Synthesis, characterization and properties of highly swelling natural superabsorbent material

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ABSTRACT

Superabsorbent polymers (SAPs) are cross-linked networks of hydrophilic polymers with a high capacity for water uptake. They have attracted great attention because of their exceptional properties and uses. SAPs can be employed in several applications, such as in hygienic products (diapers, incontinent articles and feminine hygiene), household articles, anti-condensation coating, absorbent paper products, furthermore, SAPs have been reported as good soil-conditioning materials. They can be used in agriculture to improve soil moisture retention capacity [1].

Nowadays, most of the commercially available superabsorbent products are made from petroleum-based vinyl monomers; consequently, they are not biodegradable and environmental friendliness. According to the laws of environmental protection, the exploitation of renewable and biodegradable polymers has taken much consideration due to their low production charge and biodegradability. In recent years, various natural polymers are used to develop eco-friendly superabsorbent materials based on polysaccharide backbone, such as chitin, chitosan, starch, cellulose, galactomannan, pectin … etc. [2].

The aim of this research is to develop a new superabsorbent able to absorb a high amount of water; based on modified chitosan. The chemical structure of the polymer has been characterized using thermogravimetric analysis (TGA), Scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR) and X-ray diffraction (XRD). The swelling properties of the new material were also investigated; the centrifuge retention capacity (CRC) is not less than 30 g/g and the absorbency under a load of 4.85 kPa (AUL0.7 psi) is not less than 14 g/g.

References :

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