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Preparation and swelling capacity of superabsorbent polymer composites based on attapulgite clay

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A highly efficient starch-*graft*-poly(acrylamide)/attapulgite superabsorbent composite was synthesized by graft copolymerization reaction of starch, acrylamide (AM), and attapulgite clay (APT) using *N.N'*-methylene-bis-acrylanide (MBA) as crosslinker and ammonium persulphate (APS) as an initiator, then subjected hydrolysis with sodium hydroxide. The prepared composites were characterized by Fourier transform infrared spectroscopy (FTIR). The factors affecting the swelling capacity of the composite, such as the ratios of the crosslinker, initiator, attapulgite clay, as well as the pH and the presence of saline solutions, were investigated. The water absorbencies for the prepared composites reached 2700 g /g and 380 g /g in distilled water and in 0.9 wt% NaCl solution respectively, which opens the door for agricultural applications.

Biography

Dr. El-Refaie Kenawy is distinguished Professor of polymer chemistry at University of Tanta, Egypt. He is internationally recognized in the field of polymer chemistry. He is a graduate of Tanta University, Egypt. He did his PhD. work according to channel Scheme at Strathclyde University, UK. He worked as postdoctoral fellow and visiting professor at many international universities as Pisa University, Gent University, Virginia Commonwealth University, Tokyo Institute of Technology, and Tanta University. Professor Kenawy is a member of editorial board of many international journals. He participated actively in many international conferences. In 2004, he was Abdul Hameed Shoman Award for Young Arab Scientists in Chemistry 2004. http://www.shoman.org.jo/prize/Viewer.aspx Recent award for Professor Kenawy in 2012 is the most cited award from Miser El-Kher Foundation, Egypt. He has many publications and reviews in international journals. He is research interest mainly focused on bioactive polymers, biomedical applications of polymers, antimicrobial polymers, electrospinng of polymers nanofibers, etc. Prof. Kenawy and Prof. Wnek and others from VCU, USA explored for the first time the use of nanofibers for drug delivery applications. Prof. Kenawy is a member of Egyptian Universities Promotion Committee For Organic Chemistry (2013-2015).

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