

June 04-05, 2018
London, UKYoo Jin Kim et al., Polym Sci 2018, Volume 4
DOI: 10.4172/2471-9935-C2-012

THE PROPERTIES OF SUPERABSORBENT POLYMERS SYNTHESIZED WITH ACRYLATE BASED CROSSLINKING AGENTS

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Super absorbent polymer (SAP) is a cross-linked hydrophilic polymer. It can absorb, swell, and retain aqueous solutions up to hundred times of its own dry weight. We synthesized copolymers consisting of carboxylated vinyl monomer and vinyl sulfonic acid using various crosslinking agent. Crosslinking agent is needed to synthesize SAP and it has a direct effect on the crosslinking density of the SAPs. As the amount of added crosslinking agent increases, the cross-linking density of the SAPs increases. This is related to absorbency. We synthesized the SAPs using four types of acrylate based crosslinking agents to compare absorption properties. As a result, only two of them succeeded in synthesis and the rest did not proceed. Each monomer was neutralized with sodium hydroxide to prepare carboxylate ions. Polymerization was initiated by ammonium persulfate added after the crosslinking agent addition. The structures of the prepared polymers were confirmed by FT-IR (Fourier transform infrared spectroscopy). We have measured SAP's properties such as centrifuge retention capacity (CRC) and absorbency under load (AUL) in 0.9 wt.% saline solution depending on the reaction time, reaction temperature or the amount of the crosslinking agent. We studied the effect of each crosslinking agent on the SAP absorption properties.

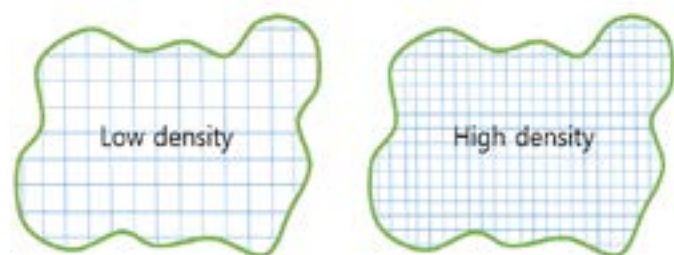


Figure 1. Crosslink density of SAP depending on cross-linking agent

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Biography

Yoo Jin Kim graduated from Myongji University, Republic of South Korea. She is currently pursuing Master's course at Hanyang University, Republic of South Korea. She majored in Chemistry at bachelor's level and in Bio-Nano Science at the master's level. She is also currently working in Korea Institute of Industrial Technology (KITECH) as a Student Researcher. She is researching on superabsorbent polymer (SAP) using bio-degradable materials that aims to reduce wastes and enhance their absorption properties.

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