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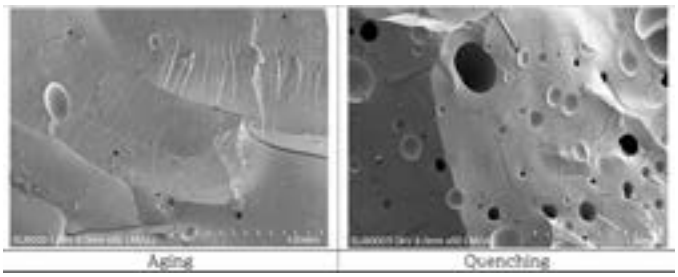
POST-TREATMENT PROCESS TO ENHANCE THE PERFORMANCES OF SUPER ABSORBENT POLYMERS

Seokju Hong[1], Byeong Kwan Kang[1], Jungsoo Kim[1], JinHoon Kim[1], JiEun Jang[1], Youngwook Chang[2] and **Donghyun Kim[1]**

[1]KITECH, Republic of South Korea
[2]Hanyang University, Republic of South Korea

As the use of absorbent disposable items such as sanitary napkins and diapers have increased, environmental problems related to waste disposal have been concerned. To resolve this problem, we can use eco-friendly superabsorbent polymer (SAP) with bio-based monomer replacing petroleum based SAP. However, bio-based SAPs have low water absorption properties. In this study, we studied the effects of post-treatment processes to enhance the performances of SAPs. The SAPs were prepared using itaconic acid, vinyl sulfonic acid, tetraethylene glycol diacrylate and ammonium persulfate initiator. Various post-treatment processes (Quenching, Aging, and Annealing) are investigated. After post-treatment processes, we measured free water absorbency, centrifuge retention capacity, and absorption under load of the SAPs. The structure of SAPs was confirmed by FT-IR. The amount of monomer residues of SAP was confirmed by HPLC.



Recent Publications

1. GAO, Jiande, et al. Preparation and properties of novel eco- friendly superabsorbent composites based on raw wheat bran and clays. Applied Clay Science, 2016, 132: 739-747.
2. BANEDJSCHAFIE, Schahram; DURNER, Wolfgang. Water retention properties of a sandy soil with superabsorbent polymers as affected by aging and water quality. Journal of Plant Nutrition and Soil Science, 2015, 178.5: 798-806.
3. ZHOU, Zhiling; YANG, Zhaozhong; LIU, Chaoping. Novel nanocomposite super absorbent polymers reinforced by clay nanosheets. Russian Journal of Applied Chemistry, 2016, 89.2: 324- 329.
4. KIM, Hyun Jae, et al. Synthesis of super absorbent polymer using citric acid as a bio-based monomer. Polymer Degradation and Stability, 2017, 144: 128-136.
5. GUO, Jian-Zhong, et al. Removal of methylene blue from aqueous solutions by chemically modified bamboo. Chemosphere, 2014, 111: 225-231.

Biography

Seokju Hong earned a bachelor's degree from Yonsei University. He is in the master's course from Hanyang University. His bachelor's major was packaging and the master's major is a chemical engineering. He wants to be an expert in the polymer field. He is currently working at Korea Institute of Industrial Technology (KITECH). He is studying SAP and using various methods to perform synthesis and analysis to improve the absorbency of SAP.

tjrwn523@kitech.re.kr