

Polymer Chemistry

June 25-27, 2018 | Stockholm, Sweden

Antibacterial properties of PET fabrics coated with copper nanoparticles through sonochemical process

Byung Gil Min, Kun Woo Jin and Sang Cheol Lee
Kumoh National Institute of Technology, South Korea

Antibacterial fabrics for use in medical textiles have been provided as useful weapon in the on-going fight against hospital-acquired infections. Generally, metal oxide nanoparticles (NPs) such as TiO_2 , ZnO and CuO have been applied on to cotton or synthetic fabrics. Recently, sonochemical coating technology has been introduced for the purpose of developing antibacterial fabrics. The method showed high efficiency for a wide variety of NPs to be coated on various textile substrates. This study aims to deposit copper nanoparticles (Cu-NPs) on PET fabrics using ultrasound irradiation. The structure of Cu-NPs/PET-fabric composites was investigated by FE-SEM (Field Emission Scanning Electron Microscopy). The adhesion of Cu-NPs to the fibers is discussed with washing tests. The excellent antibacterial activity of the Cu-NPs/PET-fabric composite is expected and would be reported in successive work. Cu nanoparticles could be successfully deposited on PET fabrics through sonochemical coating technology using probe-type ultrasound irradiation. The deposition state of Cu-NPs on the fabrics was observed to be uniform by FE-SEM. The adhesion of Cu-NPs to the fabrics was evaluated as stable enough to provide performance of antibacterial activity after five times of washing according to a standard washing condition.

Biography

Byung Gil Min has completed his PhD from Seoul National University and Post-doctoral studies from IBM Almaden Research Center in California, USA. Currently, he is working as a Professor of Kumoh National Institute of Technology located at Gumi in South Korea.

bgmin@kumoh.ac.kr

Notes: