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ANTIBACTERIAL PROPERTIES OF HYBRID FILMS PREPARED FROM BIO-POLYURETHANE AND BIO-HYDROXYAPATITE

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Polyurethane (PU) has been widely used in textile applications such as breathable fabrics. PU based on vegetable raw materials (Bio-PU) is attracting worldwide attention. As polyol consisting soft segment in PU, various kinds of vegetable oils have been used. Among them, castor oil is widely used as a starting material for the synthesis of PU, due to inherent hydroxyl groups. There are many methods for imparting antibacterial properties to textile products. Recently, it has been preferred to combine inorganic nano-particles with low human body toxicity into polymers. Silver (Ag) has been most extensively studied and used to prepare antibacterial materials including textiles in the form of nano-silver or silver doped inorganic particles. Apatite and their composites have attracted much attention as materials suitable for introducing silver ion (Ag^+). Biological apatites (Bio-HAp) are the components of bones and also pathological tissue. Due to its chemical and structural similarity to bone minerals, Bio-HAp is a promising candidate for antibacterial textile application due to its biocompatible, non-toxic, non-inflammatory and non-immunogenic properties. In this study, the hybrid of Bio-PU prepared from castor oil based polyol and silver doped Bio-HAp were prepared and characterized antibacterial activity for the application of waterproof and breathable films was done.

Biography

Byung Gil Min is a Professor of Chemical Materials at Kumoh National Institute of Technology located Gumi in South Korea. His research interests include: functional hybrids of polymer-inorganic nanomaterials, high performance fibres and functionalization of textile materials.

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