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Raman analysis and morphological studies of lignin-based carbon / sepiolite hybrid materials prepared by mechanical methods

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Lignin is a kind of biopolymer from woody plants and has complex and heterogeneous aromatic structure with aliphatic moieties. Industrial lignins including lignosulfonate and kraft lignin are abundant as by-product of pulping process. Because most of lignin was used for low-cost fuels, high-value utilization of lignin has been studied in many ways. Lignin carbonization is one way of the high-value utilization of lignin. Due to its low cost, carbon neutrality and relatively high carbon contents among biomass, lignin received attentions as a renewable carbonaceous resource. Sepiolite is a kind of silicate clay minerals. It has fibrous texture and porous structure with 'channels' and 'tunnels'. In this study, lignin-based carbon / sepiolite hybrid materials are prepared by carbonization of lignin / sepiolite hybrid materials up to 1000 °C. Lignin and sepiolite are hybridized by mechanical mixing method. Raman analysis and morphological studies for the hybrid materials were investigated. Lignin-based carbon / sepiolite hybrid materials are expected to be applied as reinforcement filler or as an absorbent material.

Biography

Hyun-gyoo Roh graduated from Seoul National University in 2012. He is a PhD student majored in Biomaterials Engineering, Seoul National University. He has studied for lignin-based materials including lignin based thermoplastic polyurethane and lignin based carbon hybrid materials.

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