Seong Baek Yang et al., Trends in Green chem 2017, 3:3
DOI: 10.21767/2471-9889-C1-006

Polypropylene/carbon nanotube for bonding of carbon fiber reinforced plastics for automotive fender applications

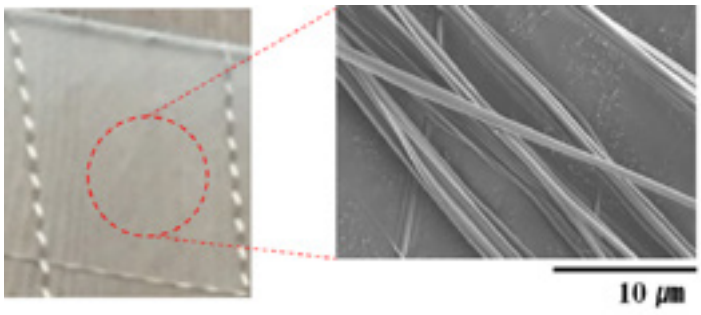
Seong Baek Yang[1], Neul Sae Rom Kim[2], Sung Hoon Yoo[1], Dong Jun Kwon[3], Byung Chul Ji[1] and **Jeong Hyun Yeum[1]**

[1]Kyungpook National University, Republic of Korea

[2]Large Co Ltd, Republic of Korea

[3]Korea Dyeing and Finishing Technology Institute, Republic of Korea

The development of internal combustion engines has actively pursued as the intensity of fuel consumption and environmental regulations for automotive parts has increased, the research speed for the development of lightweight parts has rapidly developed. Composite/carbon fiber reinforced plastics (CFRP) have been extensively developed in the modern automotive industry, and their applications in many military and commercial airplanes are steadily growing because of their enhanced characteristics as well as high strength-to-weight ratio, excellent corrosion/erosion resistance, high design flexibility, and the exceptional ability to withstand high stresses in service while reducing weight. In general, CFRP reinforcement materials are applied according to the externally bonded reinforcement system. Olefin polymer generally used as adhesives for bonding carbon fiber reinforced plastics owing to the outstanding adhesive strength of polypropylene to polypropylene composites. The discovery of carbon nanotubes (CNT) with their extraordinary physical and mechanical properties has led to unique approaches of employing them as ideal reinforcements in advanced nanocomposites. Therefore, in this research, the bonding strength between CFT (continuous fiber thermoplastic) and LFT (long fiber thermoplastic) was developed using CNT reinforced materials. The polypropylene/CNT composite resin was made by mechanical distribution of the CNT in polypropylene. The bonding made between CFT and LFT using this composite is improved by its physical properties. Polypropylene/CNT composites were used for a mechanical adhesion between CFT and LFT.



Biography

Seong Baek Yang is a PhD student, conducting research on nanomaterial manufacturing and spinning. He is also interested in the production of nanocomposites using biopolymers and environmentally friendly polymers, and is actively conducting research on nanocomposite manufacturing using electrospinning and centrifugal spinning. In addition, PVA, a biocompatible polymer, has produced and reported for cosmetics, biomedical microspheres, fibers, and films, and fibers oriented by centrifugal spinning and improved electrospinning have reported. He focuses on the development of a variety of materials that are needed for the future industry and that will be applied in a variety of areas

ysb@knu.ac.kr

Notes: