

Synthesis and Characterization of Composites using Hybrid Fillers of SiC Microparticle and SiC Nanoparticle Grafted Graphene Oxide

Sung-Ryong Kim, MinhCanh Vu, Yeseul Song, Heejin Lee, Jungyong Kim, Younghan Bae, Minji Yu

Korea National University of Transportation, 50 Daehak-ro, Daesowon-myon,
Dept. of Polymer Sci. & Eng., Chungju 380-702, Korea
srkim@ut.ac.kr

Abstract

Thermal and adhesive properties of UV-cured composites using SiC microparticle as a main filler and SiC nanoparticle grafted graphene oxide (SiCnano-GO) as an auxiliary filler have been investigated. The thermal conductivity and tackiness of the PSAs rapidly increased with adding small amount of SiCnano-GO filler in composites, however, the adhesion strength of PSAs decreased with the higher content of fillers. The composites showed the thermal conductivity of 0.62 W/m·K at 40 wt % of hybrid filler content which is more than 200 % improvement compared to the bare-PSA. It can be concluded that the enhancement is due to the chemically bonded auxiliary filler with the matrix and the facile formation of heat path between SiCmicro and mSiCnano-GO

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Figures

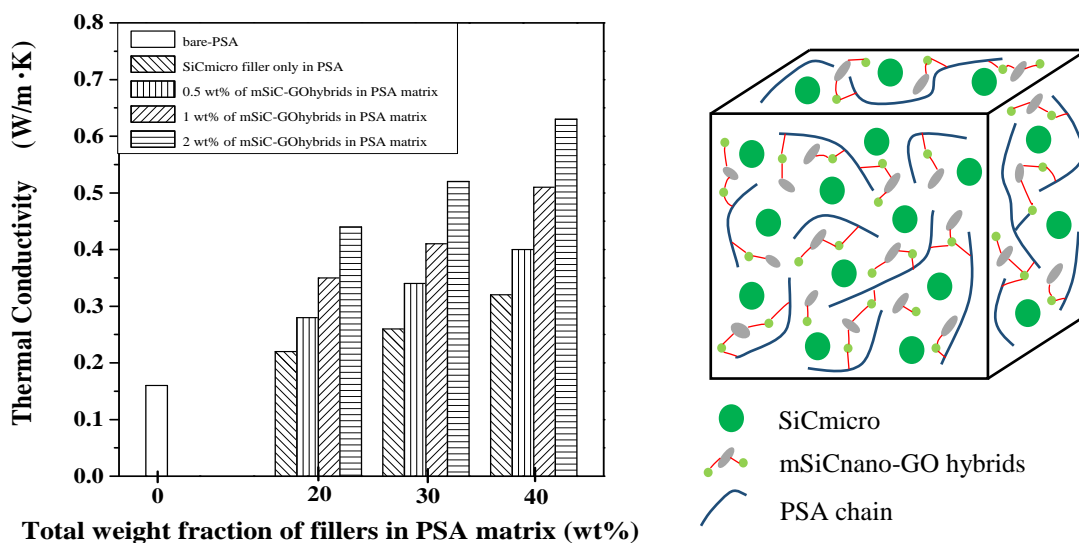


Figure 1. Thermal conductivity of PSAs and schematic drawing of PSAs filled with fillers.