

Study of the effect of interface by particle morphology on the CTE reduction of polyimide nanocomposite

전형준, 양갑필, 이강택†  
연세대학교  
(klee@yonsei.ac.kr†)

The coefficient of thermal expansion (CTE) is an important property for application to various field of nanocomposites. Various inorganic filler particles have been applied to control the CTE of nanocomposites. Previous studies have reported that the content of filler particles is responsible for the reduction of CTE. However, we have found that increasing the thermal diffusivity through the introduction of filler particles and improving the dispersion stability of the filler particles are factors affecting the reduction of CTE of nanocomposites. To investigate the specific effects of heat release capacity and dispersion stability on CTE reduction of nanocomposites, the non-aggregated spherical gold particles (AuNPs), aggregated AuNPs, and gold nanorods (AuNRs) were introduced into the polyimide. Through thermal and dispersion stability analysis, we examined the effect of nanoparticle morphology on the CTE of nanocomposites.

This work was supported by grants from the National Research Foundation of Korea (2017R1A2B4007534) and the Ministry of Trade, Industry & Energy (MOTIE, Korea) under Industrial Technology Innovation Program (No.10079347).