Thermally Conductive Adhesive Containing Graphene and Alumina as Additives

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A thermally conductive adhesive composed of graphene, alumina and epoxy resin is reported. Incorporating surface-modified alumina fillers of two different sizes into epoxy-based adhesive allows for the formation of closed packing structure in the epoxy matrix owing to their excellent compatibility to epoxy matrix, which also impedes the aggregation of graphene. Graphene, a noteworthy thermal conductor, is employed as the links between the alumina particles to afford more efficient pathways for phonon transport. In addition, phonon scattering is reduced because of lower thermal boundary resistance between epoxy and fillers, and thus resulting in a significant enhancement of thermal conductivity. The thermal conductivity of the composition containing 80 wt% alumina and 1 wt% graphene was 2.83 Wm-1K-1; such that the thermal conductivity of the composite containing 80 wt% alumina (i.e., 1.71 Wm-1K-1) is increased by 65% upon the addition of 1 wt% graphene..

References

[1] Authors, Journal, Issue (Year) page (Century Gothic 11) Indicate references with sequential numbers within [square brackets].
[2] Authors, Journal, Issue (Year) page
[3] Authors, Journal, Issue (Year) page
[4] Authors, Journal, Issue (Year) page

Figures

Figure 1: Insert caption to place caption below figure (Century Gothic 10)

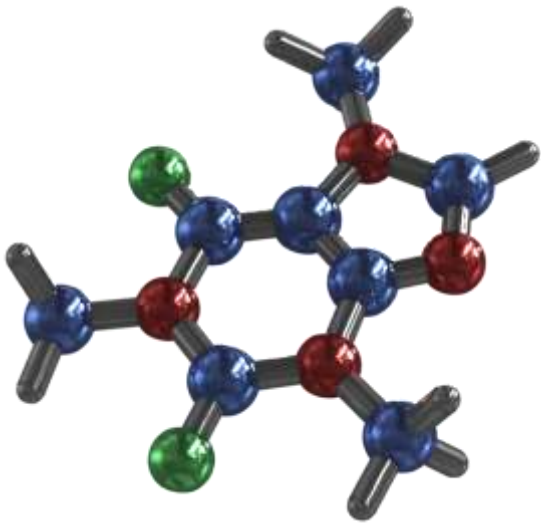

Figure 2: Insert caption to place caption below figure (Century Gothic 109