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Highly thermally conductive and mechanically robust polyamide/graphite nanoplatelet composites via mechanochemical bonding techniques with plasma treatment

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Abstract

Heat sinks made from polymer/nanocarbon composites have great potential due to their excellent processability, light weight, and low production cost compared to metal heat sinks. However, the thermal conductivity and mechanical properties of conventional polymer/nanocarbon composites have been considered insufficient for practical use as heat sinks. Here, significant improvements in both the thermal conductivity and the mechanical properties of polymer/nanocarbon composites have been achieved by a facile approach, using mechanochemical bonding techniques with plasma treatment (MBP process). Polyamide 66 (PA66) and graphite nanoplatelets (GNPs) are compounded via the MBP process, which can

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