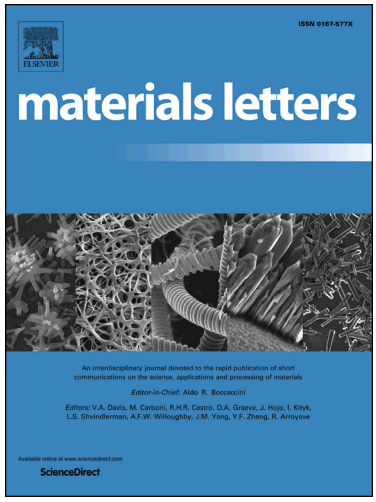

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Abstract

The low-density polyethylene (LDPE) and its composites incorporated boron nitride nanosheets (BNNS) (≤5 wt%) were fabricated and their thermal conductivities (*K*) as a function of temperature （20-80 ℃） were measured. The *K* of the composite filled with 5 wt% BNNS increased 22 % at room temperature and 48 % at a high-temperature (below melting point) compared with pure LDPE. In order to reveal the enhancement mechanism for the high-temperature *K* of the composites, the microstructure evolution of the samples with temperature increasing was investigated by in-situ Small Angle X-ray Scattering (SAXS). The results show that the structural stability with temperature increasing and the lower interfacial thermal resistance are favorable for high-temperature *K* of the composites. This work provides a new recognition for the effect of microstructure evolution on high-temperature *K* of LDPE-based composites. It is hoped that the research will be instructive for enhancing *K* of LDPE-based composites by low-content doping and making them well-suited for the high-temperature practical applications.