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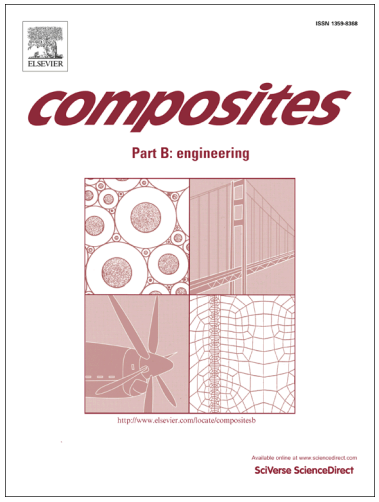

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Thermal properties measurement and heat storage analysis of paraffin/graphite composite phase change material

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Abstract

This study aims at the preparation of a paraffin/graphite waste composite for thermal energy storage application at low temperature. In this composite material, the paraffin is characterized by high phase change latent heat and graphite serves as the heat transfer promoter. An investigation by means of a differential scanning calorimeter (DSC), a periodic temperature method and a heat storage/release performance unit was conducted in order to measure the phase transition properties, the thermal conductivity and the melting time of the paraffin/graphite waste composites respectively. Experimental results indicated that the melting temperature did not change with the change of the amount of paraffin. On the other hand, the latent heat of phase change material increased with the increasing of the paraffin content. Furthermore, the heat transfer in the composite material during the heat storage process was enhanced through thermal conductivity improvement.

Keywords:

A. Recycling; A. Polymer-matrix composites (PMCs); B. Thermal propertie; E. Thermal analysis;