

Foamed poly(lactic acid) composites with carbonaceous fillers for electromagnetic shielding.

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Streszczenie

Electromagnetic shielding is one the key factors for electronic devices in their use and transportation. Polylactide (PLA) is a biodegradable polymer with a moderate biodegradability and decent mechanical properties. Replacement of traditional materials by biodegradable polymers brings about the fossil resources savings and helps solving problems related to the plastic packaging waste. In this work composites of PLA with carbon black and carbon nanofibers were described.

Improvement of the material mass/electromagnetic interference SE (shielding effectiveness) ratio can be obtained by introducing foaming technology into the material preparation process. Microporous structure can greatly improve material properties such as thermal isolation, mechanical properties and in case of composites filled with carbonaceous fillers such as carbon black carbon fibres – also the electrical conductivity. In order to improve their application range and reduce density, a cellular structure was created using chemical blowing agent. It was found that in low loaded composites (although above the percolation level) the shielding effectiveness relies on the amount of a conductive filler but it may be additionally enhanced by the foaming process. Electrical properties, electromagnetic shielding effectiveness and morphology of cellular composites for described polymer-filler systems have been presented.

Słowa kluczowe

Polymer composites, Electromagnetic shielding, Polylactide, Carbon fibers

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