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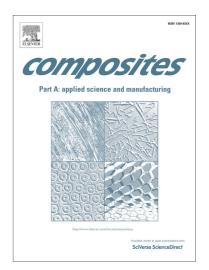
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## **ACCEPTED MANUSCRIPT**

Enhanced sound insulation and mechanical properties of LDPE/mica composites

through multilayered distribution and orientation of the mica

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Abstract: In this work, the composites with multilayered distribution of the mica were

fabricated by a multilayer coextrusion technique. The influence of layer number on

sound insulation and mechanical properties of multilayered composites was investigated.

The distribution, dispersion and orientation of mica particulates in composites were

characterized by PLM and SEM. The sound insulation property of composites was

measured by four microphone impedance tube. PLM and SEM images showed that the

mica was distributed as the multilayered structure along the thickness direction of the

composites. With the increase of layer number, more mica aggregates delaminated into

thin flakes and aligned parallel to the flow direction. Compared to the conventional

composites, the multilayered composites showed the enhanced sound insulation

efficiency and mechanical properties. The discontinuity of sound impedance and the

improved stiffness were considered to play a crucial role in the improvement of sound

transmission loss.

**Keywords:** A Polymer-matrix composites, B Vibration, D Scanning electron

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