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Preparation of polyurethane/bucky-paper composites films and characterization of their structural vibration damping and strain sensing properties

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Polyurethane/Buckypaper was prepared by curing polyurethane upon buckypaper. Cantilever beam free vibration test method was adopted to investigate the damping properties of such composites. It was found that the damping ratio of the Polyurethane/buckypaper composites is higher than each of their single components. Also, the location of the sample vis-à-vis the location of the cantilever beam's fixed support played a very important part in the damping ratio, as expected. Tests results showed that for both single side attached and double sides' attachment, the damping ratios have 1.6-2.1 times higher than that when clamped to the free, uncovered end. Also, the double sides' attachment model has higher damping ratio than the single side attachment model. Furthermore, the drift, static tensile strain sensing and the dynamic strain sensing tests results showed that the PU/buckypaper have the potential to serve as strain sensor.

Biography

Weiwei Lin is a PhD student of Florida International University, major in Materials Engineering. She is right now working on the multifunctional materials with both damping properties and strain sensing properties.

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