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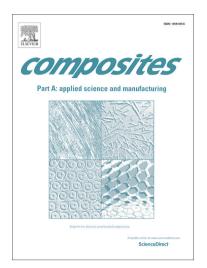
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ACCEPTED MANUSCRIPT

Research on High Electromagnetic Interference Shielding

Effectiveness of a Foldable Buckypaper/Polyacrylonitrile Composite

Film via Interface Reinforcing

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Abstract

Herein, a series of foldable buckypaper/polyacrylonitrile (BP/PAN) composite films

were developed in a facile strategy. This strategy was based on electrospun and vacuum

pressurized filtration methods. The composite film had better mechanical properties

than pristine BP via interface reinforcing, but not deprived of excellent conductivity.

The maximum tensile strength and elongation at break of BP/PAN films were 1.45 and

11.65 times than pristine BP, respectively. Moreover, BP/PAN film had higher

electromagnetic interference (EMI) shielding effectiveness (63.7-65 dB) in the Ku band

(12-18 GHz) than pristine BP (34.3-42.9 dB), due to interfaces forming between PAN

fibers and CNTs. The BP/PAN composite as a promising EMI shielding material could

be utilized in military and civil applications, such as flexible antenna, EMI shielding

clothes and soft portable electronic products.

Key words: Buckypaper; Polymer-matrix composites; Electromagnetic interference

shielding.

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