108. Title: Design and synthesis of superhydrophobic carbon nanofiber composite coatings for terahertz frequency shielding and attenuation

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Abstract: We report design and synthesis of polymer-based large-area superhydrophobic carbon nanofiber (CNF) composite coatings for tunable electromagnetic interference shielding and attenuation in the terahertz (THz) frequency regime. Such coatings with different CNF/polymer weight ratios are characterized by a frequency domain THz spectroscopy system. A maximum THz shielding effectiveness of similar to 32 dB was measured in the examined frequency range of 570-630 GHz. Coating attenuation level varied with CNF loading. Two-dimensional distributions of power attenuation at 600 GHz showed good spatial uniformity. The present composite coatings, in addition to their self-cleaning property, have high potential for advanced technology high-frequency applications. (C) Publication year: 2011 American Institute of Physics.