Abstracts

Measurement of the broadband microwave absorption and shielding characteristics of a conductive polymer

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Conducting polymers (CPs), a new class of organic materials displaying high conductivity/weight ratios, have evinced much interest recently in applications involving microwave absorption and EMI shielding. Prior microwave measurements on CPs have been limited to single frequencies or narrow bands, thin films, and permittivity measurements. In this communication, we report the first cumulative broadband measurements and computations of all microwave parameters of a CP relevant for practical application, namely, conductivity, absorption, complex permittivity, shielding and reflection. The specific CP selected is poly(aniline) (P(ANi)) doubly doped with two unique sulfonate dopants. Measurements have been carried out over a 2 to 18 GHz frequency band, on bulk P(ANi), using coaxial line techniques. Comparison with prior results on CPs shows high microwave attenuation for this polymer.

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