Abstract Submitted
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Microwave Absorption in Percolating Metal-insulator Composites[1] DARIN ZIMMERMAN, JEREMY CARDELLINO, KYLE CRAVENER, KELLY FEATHER, NICHOLAS MISKOVSKY, GARY WEISEL, The Pennsylvania State University, Altoona — We measure several electromagnetic properties of tungsten-Teflon composites as a function of metal volume concentration. The electric (E) and magnetic (H) loss tangents at 2.45 GHz and the dc conductivity each exhibit a percolation transition at a different critical value of the metal volume fraction, p. Moreover, the transition behavior depends on the average particle size and size distribution of the metal component. We explain the variation in each case by a schematic model derived from established percolation theory and the distinct response of conducting particles to microwave electric and magnetic fields.

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