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Morphological dependence on the conductance of polymer/MWNT electrospun mats DERRICK STEVENS, Dept. of Physics, North Carolina State University (NCSU), SATYAJEET OJHA, Dept. of Textile Engineering, Chemistry and Science, NCSU, WESLEY ROBERTS, Dept. of Physics, NCSU, SETH MCCULLEN, RUSSELL GORGA, Dept. of Textile Engineering, Chemistry and Science, NCSU, LAURA CLARKE, Dept. of Physics, NCSU — Porous, electrically conducting structures are an invaluable resource for improving and developing technologies such as electrostatic dissipating filters and tissue scaffolds. Fibrous mats of electrospun polymers doped with multi-walled carbon nanotubes (MWNT) are an ideal candidate for such materials. A characterization of the morphological effect on conductance for these mats is presented here. Changes in the percolating behavior were investigated under the influence of different processing parameters. Alterations of fiber size, alignment, and construction (single component vs core-sheath bicomponent) were performed. For each set of processing parameters, electrospun mats were produced with varying carbon nanotube doping levels above and below the anticipated percolating region. Multiple parameters describing the percolation were calculated and compared for each of the processing regimes.

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