

Abstract Submitted  
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**Fabrication of Superhydrophobic Fiber Coatings by DC-Biased AC-Electrospinning**<sup>1</sup> M. GAD-EL-HAK, F.O. OCHANDA, M.A. SAMAHA, H. VAHEDI TAFRESHI, G.C. TEPPER, Virginia Commonwealth University — Mesh-like fiber mats of polystyrene (PS) were deposited using DC-biased AC-electrospinning. Superhydrophobic surfaces with water contact angles greater than 150° and gas fraction values of up to 97% were obtained. A Rheological study was conducted on these fiber surfaces and showed a decrease in shear stress when compared with a noncoated surface (no slip), making them excellent candidates for applications requiring the reduction of skin-friction drag in submerged surfaces. We have also shown that addition of a second, low-surface energy polymer to a solution of PS can be used to control the fiber internal porosity depending on the concentration of the second polymer. Contact-angle measurements on mats consisting of porous and nonporous fibers have been used to evaluate the role of the larger spaces between the fibers and the pores on individual fibers on superhydrophobicity.

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