

Abstract Submitted  
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**Electrical anisotropy in coatings of aligned silver nanowires**<sup>1</sup> YE XU, Department of Physics and Astronomy, University of Pennsylvania, GABRIEL GALDERON-ORTIZ, Department of Physics and Electronics, University of Puerto Rico at Humacao, ANNEMARIE EXARHOS, Department of Physics and Astronomy, University of Pennsylvania, AHMED ALSAYED, Complex Assemblies of Soft Matter, CNRS-Rhodia-UPenn UMI 3254, KAREN WINEY, Department of Materials Science and Engineering, University of Pennsylvania, JAY KIKKAWA, ARJUN YODH, Department of Physics and Astronomy, University of Pennsylvania — Conductive and transparent coatings consisting of silver nanowires (AgNWs) have been suggested as a promising candidate to replace traditional ITO coatings for emerging flexible electronics applications. The electrical properties of such AgNW coatings depend strongly on the structure of nanowire networks formed by various processing methods. In this work, we study how the alignment of nanowires affects the electrical anisotropy in AgNW coatings. Specifically, we introduce a robust method to prepare coatings of well-aligned AgNWs on glass substrates; the method utilizes the rapid flow of AgNW suspensions through a confined geometry. The angle-dependent sheet resistance of the coatings was measured, and large anisotropy in surface conductivity was found to characterize the aligned AgNW networks. We also explore the degree of alignment and surface coverage of AgNWs in the networks, thereby establishing connections between microscopy network structures and macroscopic electrical anisotropy.

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