Abstract Submitted
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Charge Transport Studies of Dielectrophoretic Interconnects Composed of Gold Nanoparticles BIROL OZTURK, Department of Physics, Oklahoma State University, Stillwater, Oklahoma, 74078, CHARLES BLACKLEDGE, Department of Physics, Oklahoma State University, Stillwater, Oklahoma, 74078, DANIEL GRISCHKOWSKY, Department of Electrical and Computer Engineering, Oklahoma State University, Stillwater, Oklahoma, 74078, BRET N. FLANDERS, Department of Physics, Oklahoma State University, Stillwater, Oklahoma, 74078 — Dielectrophoresis was used to assemble individual, sub-micron interconnects from suspensions of gold nanoparticles and to interface them with targeted points in a circuit, all in one step. The high degree of precision associated with the photo-lithographic electrodes facilitates the determination of key electrical properties of these nanostructured interconnects. By fabricating a range of interconnects with diameters as low as 500 nm and lengths as low as 20 μm, current-voltage studies were carried out to determine the charge transport properties of these nanoparticulate structures. This work sheds light on the sources of electrical resistance in these interconnects.

Birol Ozturk
Department of Physics, Oklahoma State University, Stillwater, Oklahoma, 74078

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