

MO-POS-116

Submicron Gold Wires Fabricated Via Dielectrophoresis Of A Colloidal Suspension*, C.T. Harrower and D.R. Oliver, *Electrical & Computer Engineering, University of Manitoba* — Sub-micron metallic wires may be fabricated via dielectrophoresis of a colloidal suspension [1,2]. The goal of this project is to study the conduction character of these wires as the early stages of formation involve very small contact areas. Colloidal gold was prepared by the reduction of tetrachloroauric [III] acid with sodium citrate [3,4] and the particle sizes obtained depend upon the concentrations. The particle size distribution for the suspensions obtained has been estimated using Mie Theory and extinction measurements obtained with a spectrophotometer. In order to form wires the colloidal solution must be further concentrated by a factor of about 20 before wires could be grown at a reasonable rate. Sub-micron wires were grown between two gold electrodes (0.25 mm diameter wire) and placed in the colloidal solution. The wires were grown over a sub-millimeter electrode spacing using both electrophoresis (DC) and dielectrophoresis (AC). Control of the growth was obtained by varying the electric field strength and, in the case of dielectrophoresis, frequency. The conductivity through the system was studied during and after wire formation.

1. K. Hermanson, et al., *Science* **294** p1082 (2001)
2. R. M. Penner, *J. Phys. Chem. B* **106** p3339 (2002)
3. G. Frens, *Nature* **41** p20 (1973)
4. J.W. Slot & H.J. Geuze, *J. Cell Biol.* **90** p533 (1981)

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Experimental Characterization of an Aerogel Cherenkov Prototype for the G0 Experiment, Marcus J. Steeds¹, J. Birchall¹, B. Clement¹, W. Falk¹, L. Lee¹, S.A. Page¹, W.D. Ramsay¹, W.T.H. van Oers¹, E. Korkmaz², T.A. Porcelli² and C.A. Davis³, ¹University of Manitoba, ²University of Northern British Columbia and ³TRIUMF — The G0 experiment in Hall C at Jefferson Lab will determine the strange quark contributions to the vector form factors of the proton. The upcoming back-angle mode will use aerogel Cherenkov detectors for threshold discrimination of an electron signal against a pionic background. The results of electron beam tests of the North American prototype detector conducted at TRIUMF's M11 experimental beamline will be presented.