Direct growth and characterization of nanowires

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Direct synthesis of metallic nanowires in solution phase has immediate relevance in nanoscience and technology. The ability to assemble nanoparticles into wires is key to the fabrication of a variety of nanodevices. Nanowires of nanometer–sized metal or semiconductor islands, or quantum dots, may exhibit a variety of quantum phenomena, with applications in optical devices, nanometer-sized sensors, advanced computer architectures, ultradense memories, and quantum-information. We have synthesized nanowires of ~5 nm silver particles using solution based photochemical technique. The solution when deposited on a surface shows silver nanowires that are microns in length. Characterization by atomic force microscope shows that both open and closed loops of silver wires exist on the surface. Gold nanoparticles approximated 2 nm in diameter form nanowires between two electrically active electrodes when deposited from solution. We will present topographical images as well as electrical measurements carried out on these nanowires.