

Large-Scale Gold Nanowire-Network and Nanotube Prepared by Organic Template based on Electroless Deposition

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Nanomaterials are highly desirable for the future miniaturization of electronic devices. Recently, nanowire and nanotube have attracted a lot of interest because they are required to interconnect functional units in nanoelectronics and can work as a catalyst in the fuel cell. Herein, there have been developed many methods for synthesis of nanowire and nanotube such as a template method [1, 2].

In this work, we report a gold nanowire and nanotube of various outer diameters synthesized by organic template-assisted electroless deposition, a large-scale gold nanowire-network formed by annealing. We controlled deposition time, temperature of deposition solution, exposed time in Reactive Ion Etching (RIE), pore size of template and structure by annealing. The synthesized gold nanowire and nanotube were observed by Scanning Electron Microscopy (SEM) and Transmission Electron Microscope (TEM).

Reference

- [1] M. A. Sanchez-Castillo, C. Couto, W. B. Kim, and J. A. Dumesic, *Angew. Chem.Int. Ed.* 43 (2004) 1140.
- [2] C. R. Martin, *Science* 266 (1994) 1961.