

FABRICATION AND FOUR PROBE ELECTRICAL CHARACTERIZATION OF NANOWIRES

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Nanowires were fabricated by templated electrochemical deposition. This is a versatile technique that allows the deposition of both metallic and semiconducting nanowires. It also allows for a variety of complex morphologies such as multi-component wires and hollow nanotubes.

We present the fabrication of nanowires composed both metallic and semiconducting transition metal oxides. Compositional and morphological analysis was performed by TEM (including EDX, EELS and Selected Area Electron Diffraction) and UV- vis spectrometry.

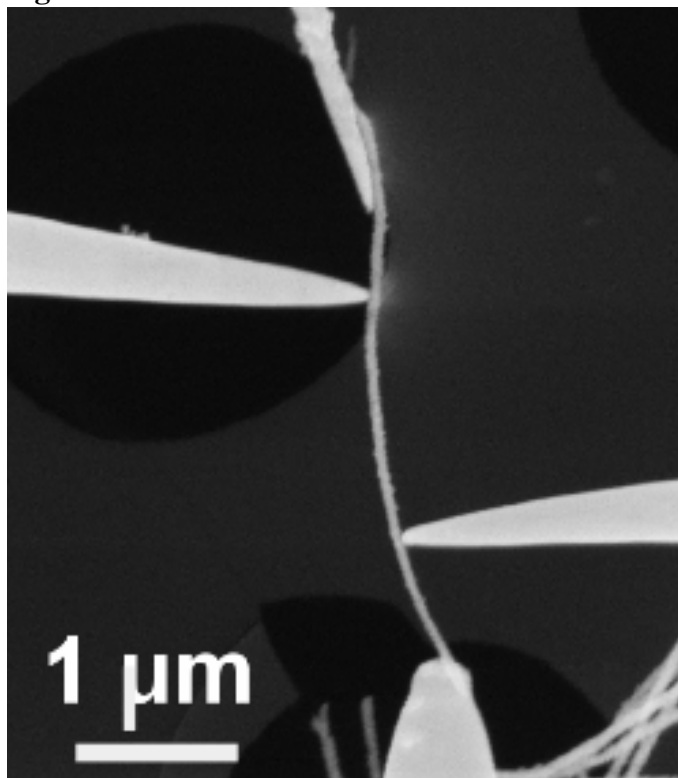
Electrical transport measurements were taken using an Omicron nanoprobe. This device comprises a high resolution SEM and four independent STMs. The SEM allows the STM tips to be brought into contact with a single nanowire and a rigorous electrical characterization can be performed. This includes:

1. four point probe measurements at varying separations on the same nanowire
2. Using a tip as a gate electrode and testing response to electric fields.
3. Four probe measurements as a function of temperature

References:

[1] Walton et al. *Nanotechnology* **18** (2007) 065204

Figures:



SEM image of a 4 – probe measurement on a copper (I) oxide nanowire