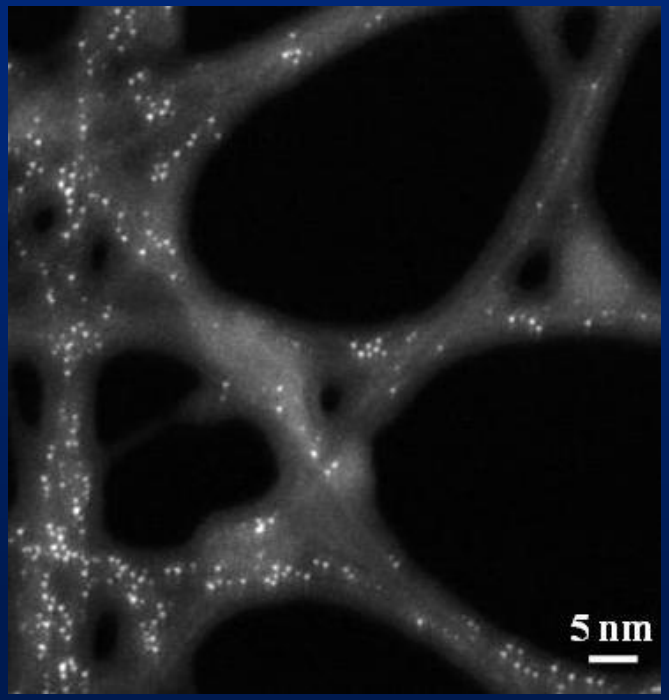
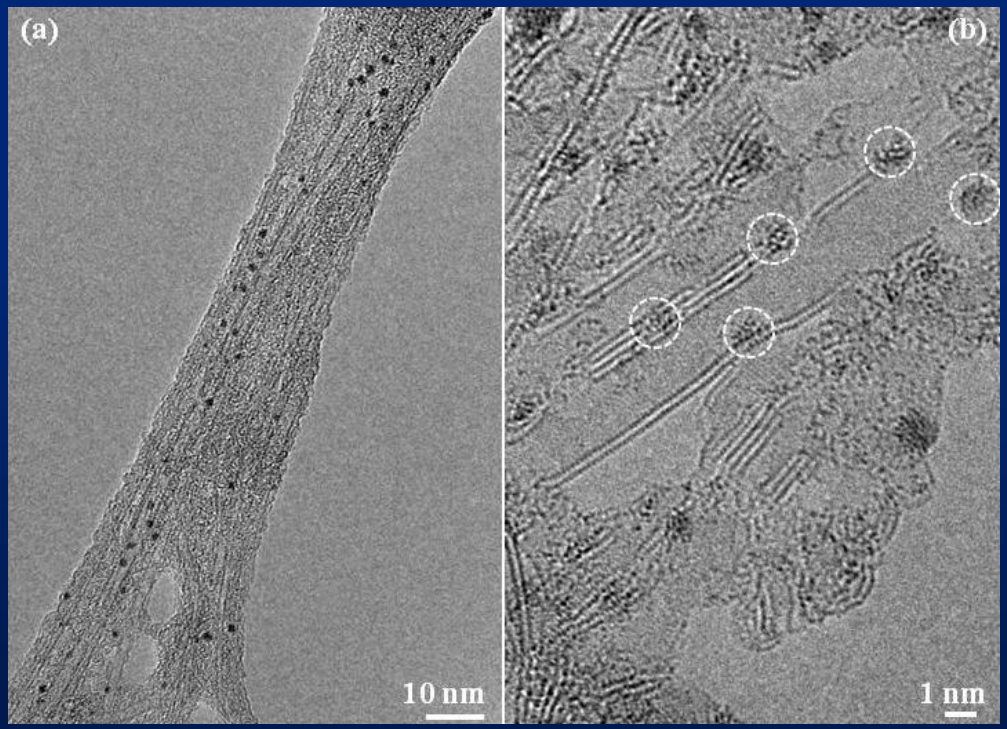
A Novel Approach for Controlled Synthesis of Single-Walled Carbon Nanotube-Supported Pt Nanoparticle Catalysts and their Electrochemical Properties

Lifeng Dong
Department of Physics, Astronomy, and Materials Science, Missouri State University



High angle annular dark-field STEM image of SWCNT/DNA/Pt nanostructures demonstrates the distribution of Pt nanoparticles surrounding the nanotubes. Bright particles are Pt nanoparticles with a uniform size of ≤1 nm to 2 nm, and no aggregations exist.



(a) TEM image of SWCNT/DNA/Pt nanostructures shows the configuration of Pt nanoparticles on the nanotubes. While imaging the nanostructures at a high magnification (b), the nanotubes started to separate from each other, and the configuration of Pt nanoparticles along the nanotubes was revealed. Pt nanoparticles (marked as dashed circles) seem to helically wrap around the nanotubes in accordance with the ssDNA addresses.

L. F. Dong, DNA-Templated Synthesis of Pt Nanoparticles on Single-Walled Carbon Nanotubes, Nanotechnology (in press).
This work was also partially supported by a Visiting Scientist Fellowship from National Center for Electron Microscopy (NCEM). Electron microscopy characterizations were performed at NCEM.