

# **In-situ fabrication, manipulation and property measurements on single nanotubes and nanowires with near atomic resolution**

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Nanoscale probes have been introduced into electron microscopes and providing vast amount of spatially resolved information on, to name a few, the local electronic structure, mechanical and transport properties of nanotubes and nanowires. In-situ electron field-emission experiments carried out inside the TEM revealed that the field-emission parameters, e.g. the threshold voltage and the field conversion factor, depend in general both on the tip-CNT distance and on the shape of both the tip and the CNTs. CNT have also been shaped into multi-bend or continuously curved morphologies, and interconnections been fabricated in situ inside the electron microscope. The shaped CNTs and fabricated interconnections were found to have excellent mechanical strength and electric conductivity that is as good as un-deformed CNT, suggesting a wider range of applications beyond simple straight CNTs.