Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Rapid and reproducible fabrication of nanotube/nanowire AFM probes by dielectrophoresis GUANG YANG, JIE TANG, QI ZHANG, AHMET PARHAT, BEN MAYNOR, JIE LIU, LU-CHANG QIN, OTTO ZHOU — Atomic force microscopes (AFM) are commonly used to map the surface structure and topography of different objects and devices. The resolution, sensitivity, and probing depth of an AFM depend on the geometry of the probe. Here, we demonstrate an efficient method to fabricate nanotube/nanowire based AFM tips by dielectrophoresis. Under dielectrophoretic force, the processed CNT bundles can be readily assembled to the apexes of conventional AFM tips with controlled and pre-determined length and orientation. Both the lateral resolution and probing depth have been studied. The fabrication process can also be utilized to assemble other 1-D nanostructures. The research was supported by NASA URETI on Bio Inspired Materials (NCC-1-02037).

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Date submitted: 01 Dec 2004 Electronic form version 1.4