Abstract for an Invited Paper
for the MAR10 Meeting of
The American Physical Society

Synthesis and application of CNT arrays

YOUNG HUANG[1], Northwestern University

High mobilities and other attractive features of single-walled carbon nanotubes (SWNTs), create interest in their use in high speed or unusual (i.e. flexible, stretchable) forms of electronics. Growth strategies that use chemical vapor deposition onto crystalline quartz substrates yield nearly perfectly linear, perfectly aligned, horizontal arrays of individual SWNTs. Such configurations are ideally suited to integration into planar device technologies. This talk describes our research in this area, and highlights (1) fundamental theoretical and experimental studies of the alignment process, (2) some strategies for achieving high density arrays and for removing metallic SWNTs, and (3) device and circuit implementations, including high mobility transistors with GHz switching speeds and their integration into carbon nanotube transistor radios.

[1]In collaboration with John Rogers, University of Illinois