

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Synthesis and field emission properties of periodic arrays of vertically aligned carbon nanotubes on copper¹ SUMAN NEUPANE, WENZHI LI, Florida International University — Periodic arrays of carbon nanotubes (CNTs) with different densities were synthesized on copper substrate by employing nanosphere lithography (NSL) and plasma enhanced chemical vapor deposition. Vertically aligned CNTs were formed using Ni as catalyst at a growth pressure of 8 torr of C₂H₂/NH₃ mixture and a temperature of 520 °C. Electron emissions of the CNTs with different densities were investigated to reveal the dependence of the electron emission properties of the CNTs on their densities. Experimental results showed that low-density CNTs exhibited better field emission properties as compared to the high-density CNTs. Low-density CNTs exhibited lower turn-on and threshold electric fields, and a higher field enhancement factor. The high density of CNTs resulted in the deterioration of the FE properties due to the screening of the electric field by the adjoining CNTs.

¹This work is supported by the National Science Foundation under the grant DMR-0548061

Suman Neupane
Florida International University

Date submitted: 11 Nov 2011

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