

Abstract Submitted  
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**Stable Electron Field Emission from Opened-Tip Carbon Nanotube Bundles** ARCHANA PANDEY, ABHISHEK PRASAD, JASON MOSCATELLO, Student, YOKE KHIN YAP, Professor — Effective electron field emission from carbon nanotubes (CNTs) has been known for years but reliable commercial devices are still not available. Most reported works describe low emission threshold field ( $E_{th}$ ) of CNTs and their device architectures. However, fundamental factors that determine stable emission from CNTs are still not clear. We previously reported that graphitic order of CNTs affects their emission stability [1]. Here, we found that both opened tip nanotubes and bundling, when introduced independently, can reduce  $E_{th}$  of CNTs and enhance the emission stability. The combined of both factors, i.e., opened tip nanotube bundles are shown to emit electron continuously > ten hours with notable stability. Theoretical simulation was conducted in supporting our explanation on these enhanced emission properties. SEM, TEM and Raman spectroscopy was conducted to characterize the as grown CNTs. Y. K. Yap acknowledges support from the Defense Advanced Research Projects Agency (DAAD17-03-C-0115, through Army Research Laboratory). [1]. Kayastha et al, Nanotechnology 18, 035206 (2007).

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