

Abstract Submitted  
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**Field Enhanced Thermionic Electron Emission from Oxide Coated Carbon Nanotubes**<sup>1</sup> CHRISTOPHER DAY, FENG JIN, YAN LIU, SCOTT LITTLE, Ball State University — We have created a novel nanostructure by coating carbon nanotubes with a thin functional oxide layer. The structure was fabricated by sputter deposition of a thin film of oxide materials on aligned carbon nanotubes, which were grown on a tungsten substrate with plasma enhanced chemical vapor deposition. This structure combines the low work function of the oxide coating with a high field enhancement factor introduced by carbon nanotubes and we have demonstrated that it can be used as a highly efficient electron source. A field enhancement factor as high as 2000 was observed and thermionic electron emission current at least an order of magnitude higher than the emission from a conventional oxide cathode was obtained.

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