Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Field Emission of Electrons From Transparent Carbon Nanotube Sheets. ALEXANDER KUZNETSOV, NanoTech Inst., The Univ. of Texas at Dallas, ALEXANDER ZAKHIDOV, Dept. of Phys., Moscow State Univ., Moscow, Russia, MEI ZHANG, SERGEY LEE, RAY BAUGHMAN, ANVAR ZAKHIDOV, NanoTech Inst., The Univ. of Texas at Dallas — The well-ordered aligned arrays of multiwalled carbon nanotubes were used to make strong and transparent carbon nanotube sheets, prepared by dry spinning from oriented MWCNT forests [1]. Study of electron field emission (FE) shows phenomenally low threshold fields < 0.5 V/mm with very high current densities and steep I-V curves. Also some unusual features observed in IV curves including step-like current increase and hysteresis behavior. Some possible explanations are proposed. Such CNT transparent sheets can be used as high current, high stability field emission sources which are at the same time transparent and can be used as an optical polarizer. The prototype of high luminosity fluorescent lamp with CNT sheets as a cathode was created.

[1] M.Zhang, S.Fang, A.Zakhidov, S.B.Lee, A.Aliev et.al., Science, 309,(2005) 1215

Alexander Kuznetsov
NanoTech Inst., The Univ. of Texas at Dallas

Date submitted: 04 Dec 2005 Electronic form version 1.4