
FIELD EMITTERS AND MATERIALS

Thursday, May 24 / 10:40 am 12:00 pm / Room 102

Chair:

Kenneth A. Dean, Motorola, Inc., Tempe, AZ, U.S.A.

Co-Chair:

Myung Hwan Oh, Dankook University, Seoul, Korea

**42.1: Invited Paper: Field Emission from Nanostructures: (10:40)
Carbon Nanotubes and Metal Nanowires***D. Pribat, C. S. Cojocaru, S. Xavier, S. H. Lim, A. J. Guillet
Ecole Polytechnique, Palaiseau, France*

Field-emission data and processing parameters from multiwall carbon nanotubes grown by plasma-enhanced chemical-vapor deposition and metal nanowires grown by electrochemical deposition in porous membranes will be presented. Treatments to improve the current uniformity will be presented, and simple processes to manufacture large arrays used for LCD backlighting are proposed.

**42.2: Efficient Field Emission from ZnO by Morphological (11:00)
and Electronic Design***X. W. Sun, C. X. Xu, A. Wei
Nanyang Technological University, Singapore, Singapore*

By fabricating ZnO into a pin structure with a sharp tip, low threshold voltage and high-emission current density were obtained. The doping of ZnO increased the Fermi level to increase the conductivity and reduce the emission barrier. ZnO field emitters are oxidation resistant, allowing less stringent processing and low vacuum operation.

**42.3: Electron-Emission Characteristics of Carbon (11:20)
Nanotubes Grown by RAP Process***K-C. Park, J-H. Ryu, Y-Y. Yu, K-S. Kim, J-H. Moon, J. Jang
Kyung Hee University, Seoul, Korea*

Carbon nanotubes (CNTs) grown on a patterned Ni/Si substrate by means of a novel resist-assisted-patterning (RAP) method showed good electron emission characteristics as a function of the number of island emitters. The emission current of each emitter island reached 7.8 nA at 9 V/ μm with a 40- μm pitch and 10- μm island diameter.

**42.4 Application of a Novel Dynode Structure to CNT (11:40)
Field-Emission Unit***S-W. Lai, J-M. Chiou, S-H. Lee, H-Y. Li, K-K. Chang,
B-N. Linn, C-H. Fu, Y-Y. Chang, L-E. Chou, M-H. Lin,
C-C. Lee
ITRI, Hsinchu, Taiwan, ROC*

A novel three-fold dynode structure was introduced into the CNT-FED to improve its uniformity. Experiments were carried out to study the effects of oxides and oxide film thickness on the electron multiplication of dynodes. At present, the three-fold dynode exhibits electron multiplication factors close to unity.

LUNCH (12:00–2:00)**AUTHOR INTERVIEWS (5:00–6:00)**