CARBON NANOTUBES BY LOW TEMPERATURE THERMAL CVD PROCESS FOR FED APPLICATIONS.

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Multi Walls Nano Tubes (MWNT) distributed uniformly on catalyst metal coated silicon substrate have been synthesized by Thermal Chemical Vapour Deposition using C_2H_2 at 500 – 650°C. The growth properties are studied as a function of the catalyst layer thickness, deposition temperature, C_2H_2 flow rate and growth time. Large area of mostly aligned nanotubes exhibiting length up to 3 µm and diameter from 10 to 80 nm have been produced (figure 1). Applications to field emission displays (FED) are demonstrated. Indeed integration of these tubes on triode structure have been done successfully (figure 2). Peak current density up to 5 mA/cm² have been measured with 115 V on the gate and 1000V on the anode (figure 3).

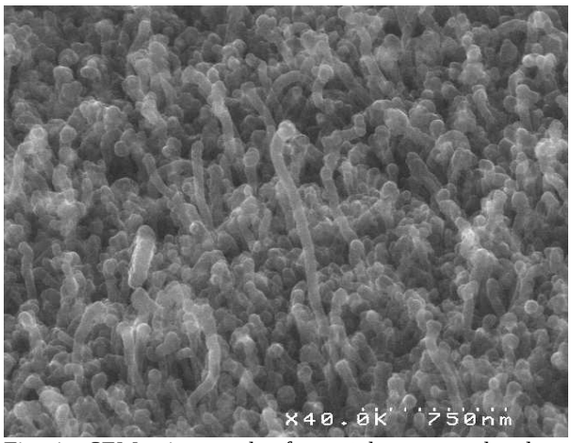

Fig. 1 : SEM micrograph of nanotubes grown by thermal CVD using acetylene gas.

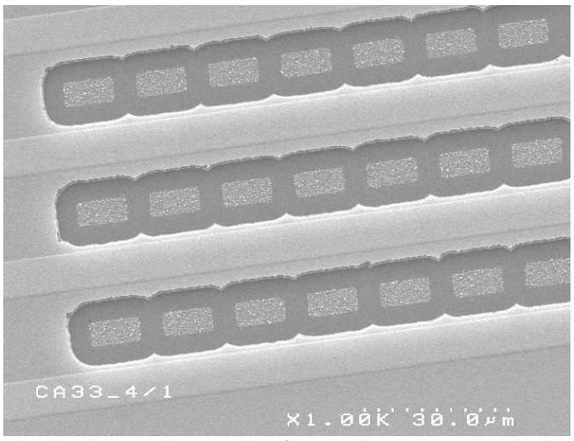

Fig. 2 : SEM micrograph of nanotubes grown on Cathode structures.

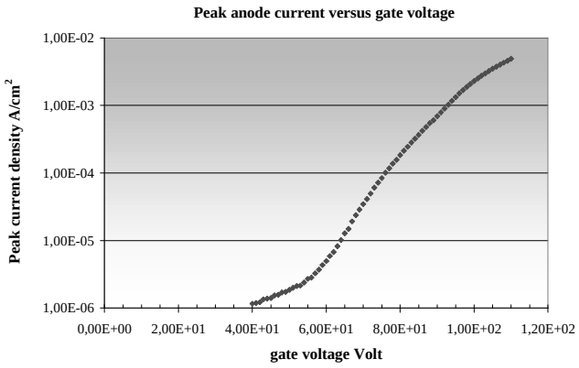

Fig3: Emission characteristic obtained with the triode structure. Vanode=1000V anode cathode gap 1mm.