

Field Emission Characteristics of Ni-Coated Si-Tip Arrays

Sung Hyun Lim, S.W. Choi, M.Y. Jung¹, D.W. Kim, S.S. Choi,

Department of Physics, Ahsan, Chungnam, Korea 336-840

J.Y. Park, Y. Kuk

Department of Physics, Seoul National University, Seoul, Korea

There have been tremendous interests on field emission cathode arrays for flat panel displays and nanolithography applications. The nano-size Si tip arrays has been extremely useful due to the batch fabrication capabilities. Though, due to the lack of desirable properties of the Si-tip such as low extraction voltage, stable emission, long-lifetime, small emission angle, low energy spread, there have been numerous efforts to overcome these problems. In this report, the nano-size($\sim 20\text{nm}$ radius) Si tip arrays have been fabricated (Figure 1) and the deposition of the Ni layers using e-beam evaporation and followed by low temperature annealing at 500°C will be performed. The field emission characteristics of these arrays will be examined.

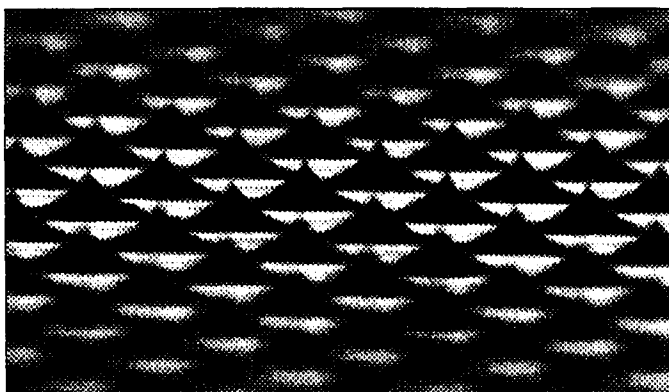


Figure 1. The fabricated Si-tip arrays seen by scanning electron microscopy. The diameters and heights of the tips were found to be $\sim 20\text{nm}$ and $1.3\mu\text{m}$, respectively.

(1): Present address: Research Center for Atomic Scale Surface Science, Yonsei University, Seoul, Korea