

Controlled Catalytic Synthesis of Carbon Nanotubes Density on the Anodic Aluminum Oxide

의응주, Zhao Xiaowei, 이건홍*
포항공과대학교
(ce20047@postech.ac.kr*)

Carbon nanotubes (CNTs) are ideal materials as field emitters because of their high chemical stability in severe environments, and a high aspect ratio. Nanoporous anodic aluminum oxide (AAO) template on the n-type Si wafer was used because the AAO has highly ordered vertical pores, uniformly aligned pores, and extremely large pore density up to $10^9 / \text{cm}^2$. A thin layer Al was deposited on the n-type Si wafer, followed by three-step anodizing method which was carried out in a 0.3 M oxalic acid solution at 15 °C. The CNTs were grown by the chemical vapor deposition (CVD) with the electrochemically deposited Co catalysts on the bottom of the AAO holes. Scanning electron microscopy and transmission electron microscopy studies revealed that the density of CNTs was controlled by aspect ratio of the pores of the AAO template.