

Field emission properties of electrochemically deposited gold nanowires

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Field emission properties of vertically aligned gold nanowires of different aspect ratios and spatial distribution are presented. The nanowires were electrochemically deposited into the pores of etched ion-track polymer membranes. High emission site densities up to $5.7 \times 10^5 \text{ cm}^{-2}$ based on a controlled field enhancement β of individual emitting sites were observed by means of field emission scanning microscopy. Local measurements reveal stable Fowler–Nordheim behavior of the emitters up to currents of $100 \mu\text{A}$. The integral emission of Au nanowires cathodes for device application is also discussed.