



Template-Based Nanowire Fabrication

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Nanoscale structures often reveal distinct properties and novel applications of many materials. Two-step anodization was used to fabricate a thin layer of porous alumina. The alumina layer was then used as a template for the electrodeposition of metal nanowires. A direct contact between nanowires and an underlying conductive substrate is realized by first lowering the thickness of the residual aluminum and then removing the entire barrier using a chemical wet etch. We explored various experimental procedures and optimized several parameters to form vertically aligned Ni nanowires with lengths of 100 - 900 nm and diameters of 50 - 90 nm. The results are verified by the images taken from JEOL JSM-6700F Field Emission SEM and Veeco DimensionTM 3100 AFM. The precise control of nanowire growth has important applications in many fields of bioresearch. The current investigation of the interaction between uniform nanowire structures and cell growth aims to elucidate how live cells interact with nanoscale morphology, with potential applications in single-cell interrogation and nanomedicine.