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Fabrication of silicon nanowires by electron beam lithography and thermal oxidation size reduction method

Abstract

A simple method for the fabrication of silicon nanowires using Electron Beam Lithography (EBL) combined with thermal oxidation size reduction method is presented. EBL is used to define the initial silicon nanowires of dimensions approximately 100 nm. Size-reduction method is employed for reaching true nanoscale of dimensions approximately 20 nm. Dry oxidation of silicon is well investigated process for self-limited size-reduction of silicon nanowires. In this paper, successful size reduction of silicon nanowires is presented and surface topography characterizations using Atomic Force Microscopy (AFM) are reported.

Keywords; Advance Nanolithography, Atomic Force Microscopy (AFM), BOE, EBL, Inductively Coupled Plasma-Reactive Ion Etching, ma-N2400 Negative Resist, Silicon Nanowire, Size-Reduction, Thermal Oxidation