

NANOWIRE FORMATION FOR SINGLE ELECTRON TRANSISTOR USING SEM BASED ELECTRON BEAM LITHOGRAPHY (EBL) TECHNIQUE: POSITIVE TONE VS NEGATIVE TONE E-BEAM RESIST

Abstract

Experimental studies of nanowires formation are carried out by using Scanning Electron Microscope Based Electron Beam Lithography (EBL) Technique with critical dimensions in less than 100nm. In order to complete the design cycle for the best nanowires, many contributing factors are considered. These factors include electron beam resists, resolution, working area/write field, structure size, step size, beam current, dose factor, exposure parameters and exposure time. The nanowires are designed by the powerful RAITH ELPHY Quantum GDSII Editor. The RAITH ELPHY is a CAD program for EBL and directly transferred on the sample coated with positive tone and negative tone e-beam resist. Comparison dimensions of both e-beams resist are included and discussed in this paper.