

Effect of Oxidation on SGOI Nanowire Biosensor Fabrication Using Ge Condensation

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Abstract

Ge condensation offers an attractive way to increase Ge the fraction of Ge in SGOI. From authors' previous investigations, increasing the fraction of Ge increases the sensitivity of the SiGe nanowire sensor. To understand how Ge condensation on an SGOI nanowire sensor helps to optimize the conditions of oxidation and improve the sensitivity of the sensor, the effect of oxidation gas and SiGe/(I-Si stacked structure on the movement of Ge is examined. The results reveals that SiGe nanowire has a maximum sensitivity when it includes a 14% Ge containing Si' _xGex layer that is stacked on a 200 A-thick (I-Si layer and is treated for 3 min with O₂ gas to which is added 13% N₂ gas.

Keyword : SiGe-on-Insulator, bio-sensor, oxidation