

Abstract Submitted
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Raman Spectroscopy Study of Uniaxial Strained SOI with SiGe Junctions YAN DU, MEHMET OZTURK, VEENA MISRA, ECE Department, North Carolina State University, JOHNSON KASIM, ZEXIANG SHEN, School of Physical & Mathematical Sciences, Nanyang Technological University — In bulk PMOSFETs, selective epitaxial $\text{Si}_{1-x}\text{Ge}_x$ junctions have been used to introduce strain into the channel for mobility enhancement purposes. Freescale has applied this idea to SOI wafers where they demonstrated that mobility enhancement is prominent for 400Å partially depleted SOI PMOSFETs. But the scaling capability of this technology for very thin SOI wafers needs to be verified. In this report, we studied the impacts of body thickness and recessing on thin SOI films down to 200Å. UV-Raman data confirms that even without recessing, except for silicon consumed during RCA cleaning step, epitaxial $\text{Si}_{0.5}\text{Ge}_{0.5}$ still introduces a certain amount of strain into the channel. This is beneficial for fully depleted SOI applications, in which the ultra thin body presents challenges for RIE etching.

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