

Invited seminar presented at Texas Instruments, Dallas, Texas, on Nov. 11, 2002.  
(Contact: Rick Wise)

## **A Novel Method for Forming a Virtual Substrate for Growing Strained SiGe Thin-Films**

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Abstract:

A novel method of growing a virtual substrate utilizing ion implantation and oxidation will be discussed. The technique involves Ge<sup>+</sup>-implantation to form a dilute SiGe solution in the near surface. Subsequent oxidation results in the complete rejection of the Ge at the oxide/Si growth interface causing the Ge to pile up at this location. This snowplowing leads to the formation of an almost pure Ge layer oriented crystallographically with the Si substrate. The formation of a virtual substrate requires that the relative concentration SiGe segregated layer be controlled and the mismatch strain be relaxed without plastic deformation. Techniques for accomplishing these goals will be discussed.

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