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Title

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Abstract

Highly doped GeSn material is interesting for both electronic and optical applications. GeSn:B is a candidate for source-drain material in future Ge pMOS device because Sn adds compressive strain with respect to pure Ge, and therefore can boost the Ge channel performances. A high B concentration is required to obtain low contact resistivity between the source-drain material and the metal contact. To achieve high performance, it is therefore highly desirable to maximize both the Sn content and the B concentration. However, it has been shown than CVD-grown GeSn:B shows a trade-off between the Sn incorporation and the B concentration (increasing B doping reduces Sn incorporation). Furthermore, the highest B concentration of CVD-grown GeSn:B process reported in the literature has been limited to below 1×10^{20} cm^{-3}. Here, we demonstrate a CVD process where B δ-doping layers are inserted in the GeSn layer. We studied the influence of the thickness between each δ-doping layers and the δ-doping