Dear Colleagues

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Our article entitled "**Valence band structure calculations of strained $Ge_{1-x}Sn_x$ quantum well pFETs,**" arXiv:1703.01812*,* 2017.

CVD-grown GeSn pFETs have attracted great attention due to higher hole mobility than Ge pFETs [Huang Y-S *et al* 2016 *IEDM*]. Nevertheless, few information of valence subband structures in GeSn inversion layers is reported. 6×6 k·p model is widely used to calculate the valence subband structures in Si, Ge, and SiGe inversion layers. Linearly interpolated 6×6 k·p Luttinger and deformation potential parameters between pure elements based on the virtual crystal approximation (VCA) were also widely adopted for SiGe and GeSn alloys [Wirths S *et al* 2015 *Nat. Photonics*]. However, for relaxed GeSn alloys, we found hole masses calculated by 6×6 k·p VCA shows different Sn dependent from those calculated by the full-band structure calculation (empirical pseudopotential method) (EPM) [Low *et al* 2012 *J. Appl. Phys*. **112** 103715].

In this article, one set of 6×6 k·p parameters for $Ge_{1-x}Sn_x$ alloys with $0 \le x \le 0.2$ and biaxial strain from −3% to 1% on (001), (110), and (111) substrates are fitted from the calculated valence band structures using our EPM [Lan H-S *et al* 2017 *J. Phys. D: Appl. Phys.* **50** 13LT02.]. Valence subband structures in Ge/GeSn/Ge inversion layers are theoretically studied using the fitted 6×6 k·p parameters. The incorrected 6×6 k·p VCA parameters are also used for comparison. The given 6×6 k·p parameters could be useful information for calculating valence properties of GeSn alloys.

Sincerely yours,

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