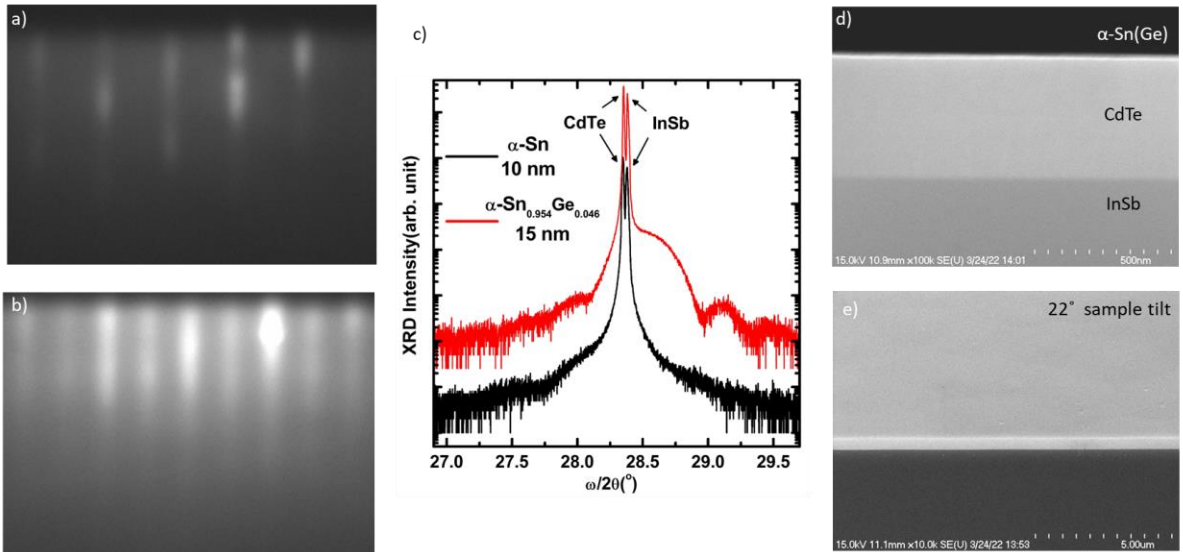

Fig. 1. After a few monolayers of α-Sn(Ge) growth, RHEED becomes a streaky (2x2) pattern (a,b). The thickness and Ge composition were determined from XRD simulation and Pendellösung fringes (c). Cross sectional SEM imaging confirmed thickness and showed single crystal layers with abrupt interfaces between α-Sn(Ge)/CdTe/InSb (d) and smooth surfaces (e).

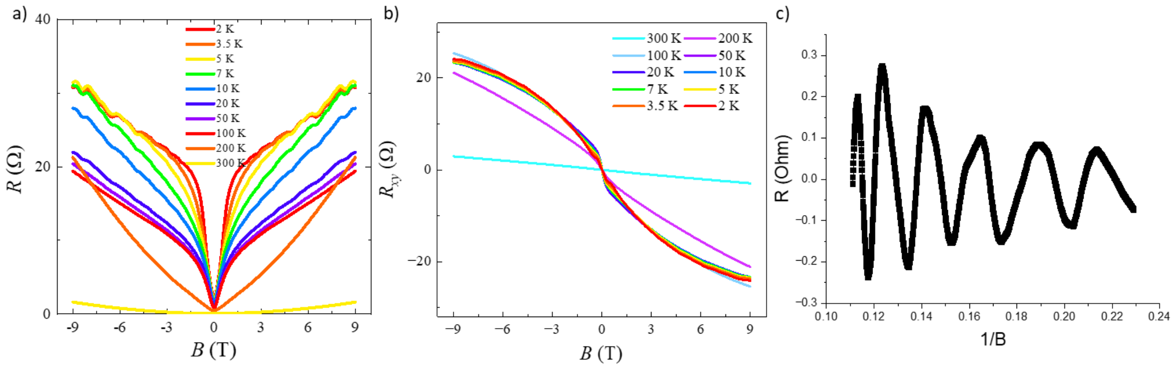

Fig. 2. α-Sn and dilute Ge alloys exhibit large magnetoresistance, Shubnikov-de Haas oscillations and weak antilocalization (a,b). Expanded Shubnikov-de Haas quantum oscillations as a function of inverse magnetic field (c).

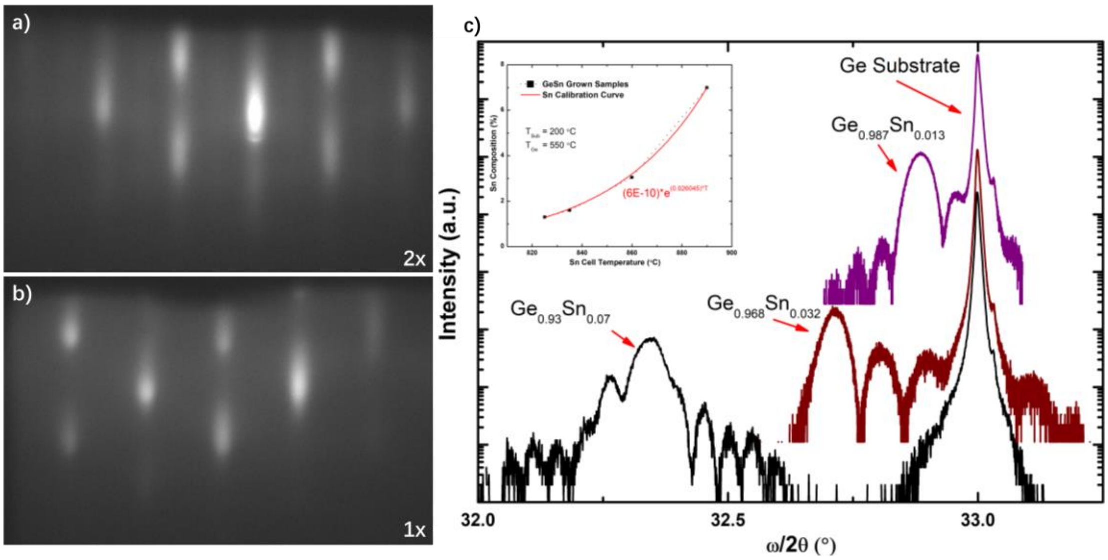

Fig. 3. RHEED reconstruction changes from (2x) to (1x) with increasing Sn composition (a,b). XRD spectra of GeSn samples towards achieving *k*-SCS with increasing Sn content, showing nice Pendellösung fringes (c). (inset) Sn composition versus Sn cell temperature calibration curve for constant substrate and Ge cell temperature.

[1] D. Zhang, H. Wang, J. Ruan, G. Yao, and H. Zhang, "Engineering topological phases in the Luttinger semimetal *a*-Sn," *Physical Review B*, vol. 97, no. 19, p. 195139, 05/21/ 2018

[2] T. T. McCarthy, Z. Ju, S. Schaefer, S.-Q. Yu, and Y.-H. Zhang. “Momentum(k)-Space Carrier Separation Using SiGeSn Alloys for Photodetector Applications” *Journal of Applied Physics* **130**, 223102 (2021)