Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary Material

1 Le Bail fitting graphs of the XRD data

The graphs of the Le Bail refinements of the powder XRD data are given in the figures below. The black crosses denote the observed, the red lines represent the refined data. The positions of Bragg reflections are plotted green; the blue lines correspond to the difference between the calculated and observed XRD patterns.

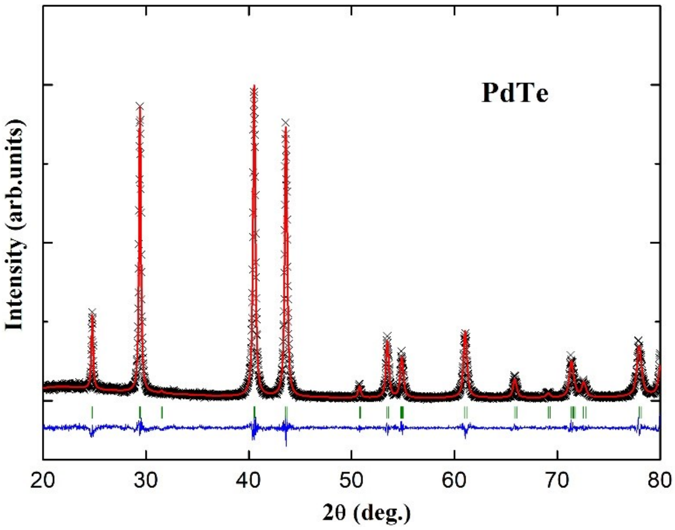

Fig S1. Le Bail refinement plot of PdTe.

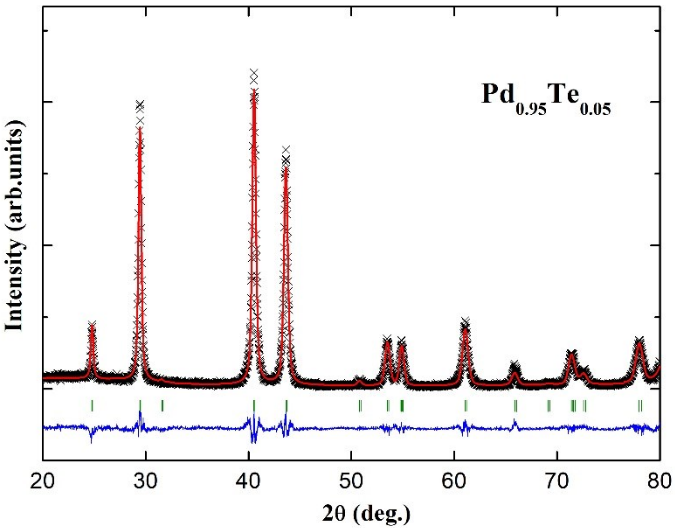

Fig S2. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.05).

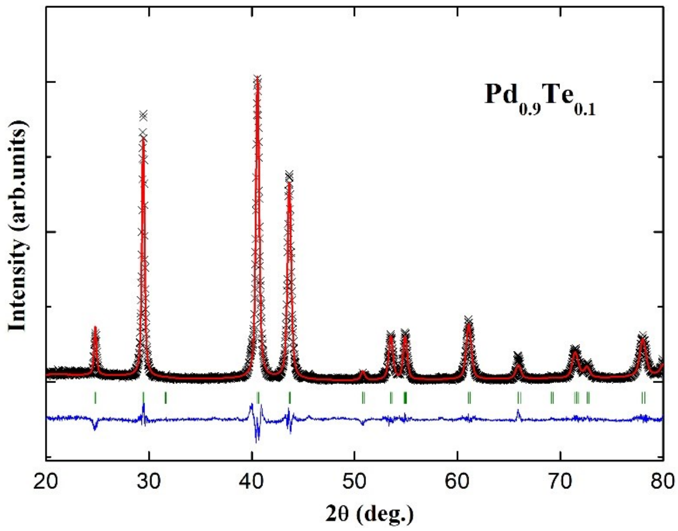

Fig S3. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.1).

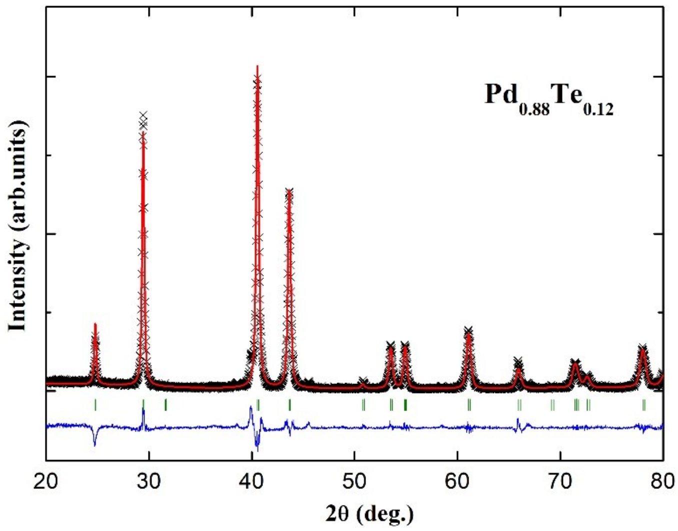

Fig S4. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.12).

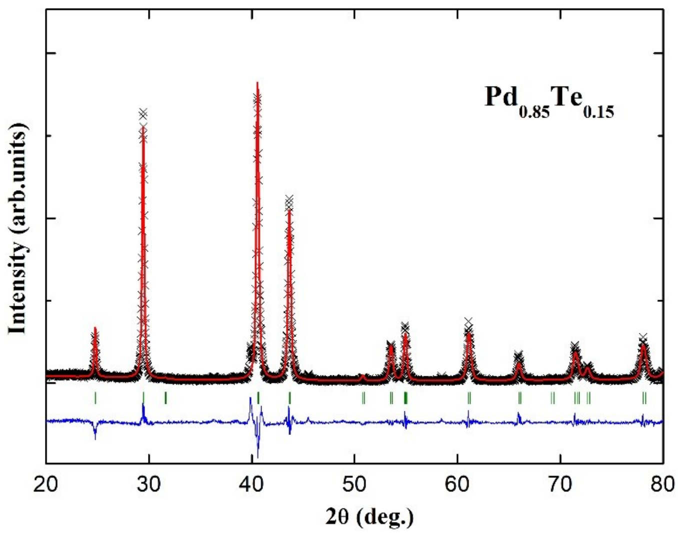

Fig S5. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.15).

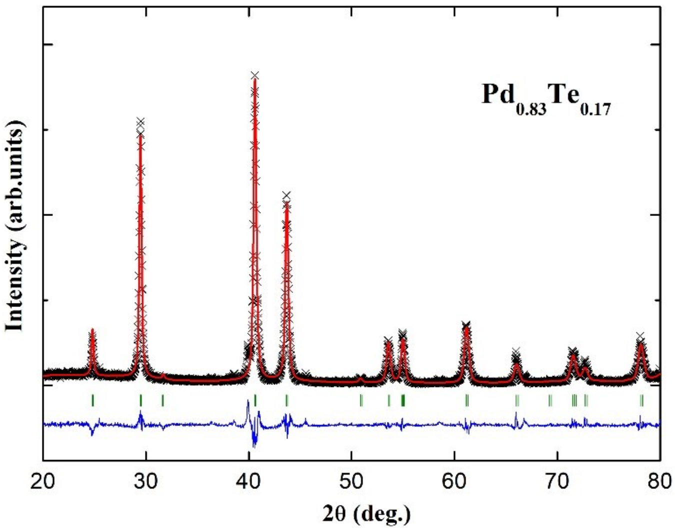

Fig S6. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.17)

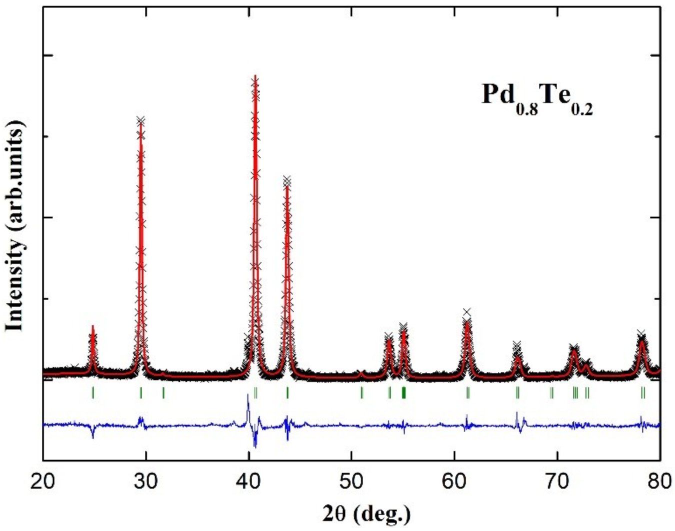

Fig S7. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.2).

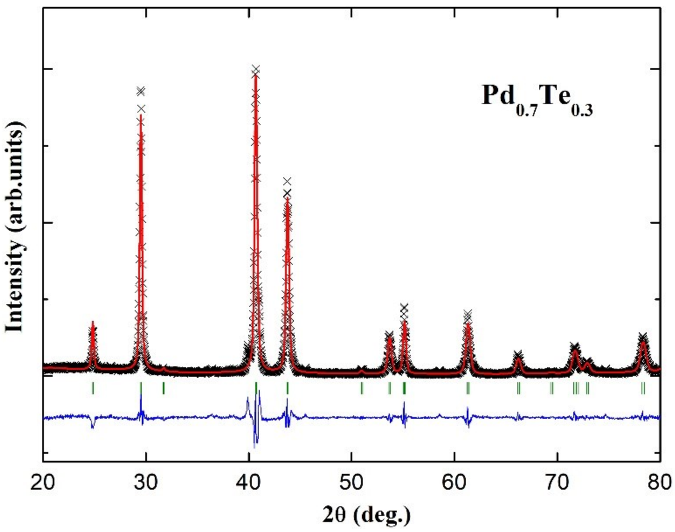

Fig S8. Le Bail refinement plot of $PdTe_{1-x}Sb_x$ (x = 0.3).

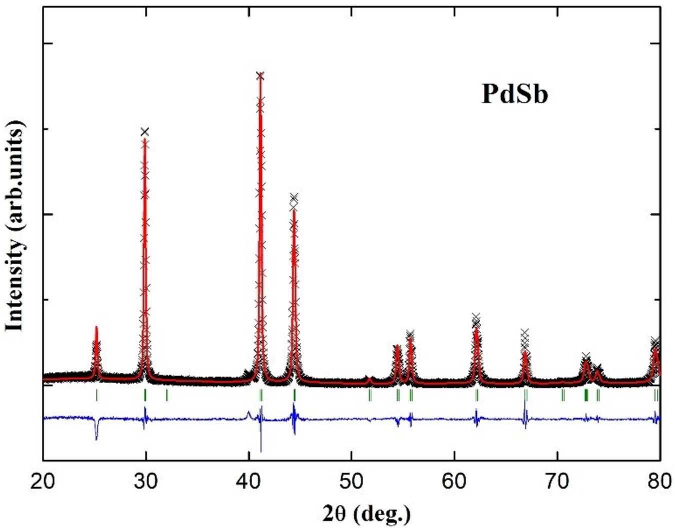

Fig S9. Le Bail refinement plot of PdSb.

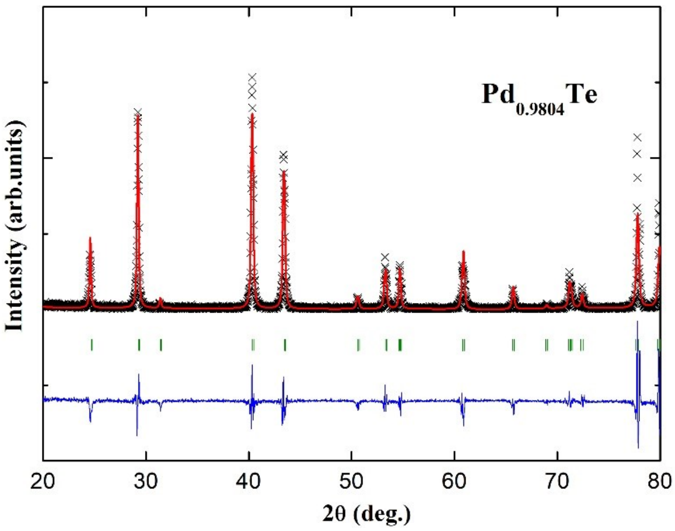

Fig S10. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 1.96 %).

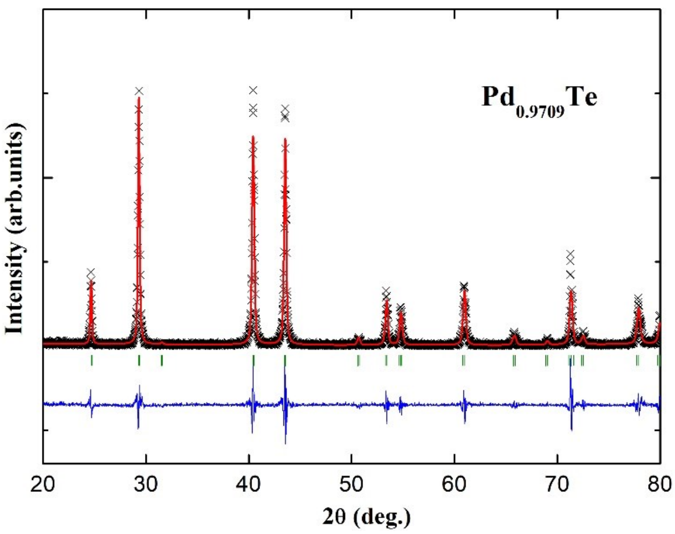

Fig S11. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 2.91 %).

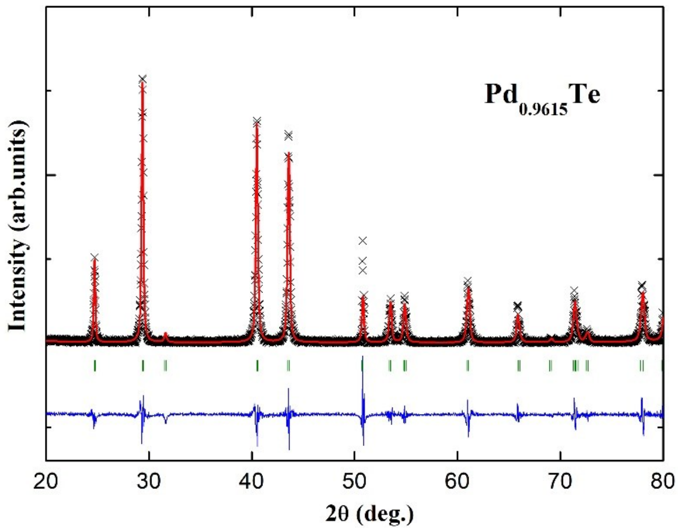

Fig S12. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 3.85 %).

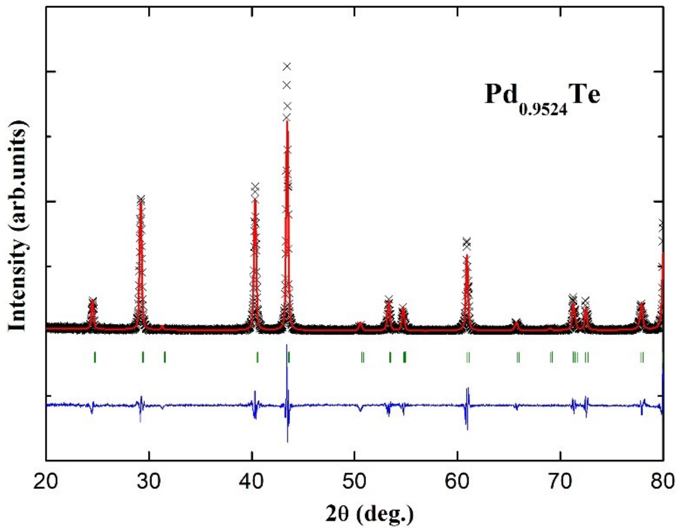

Fig S13. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 4.76 %).

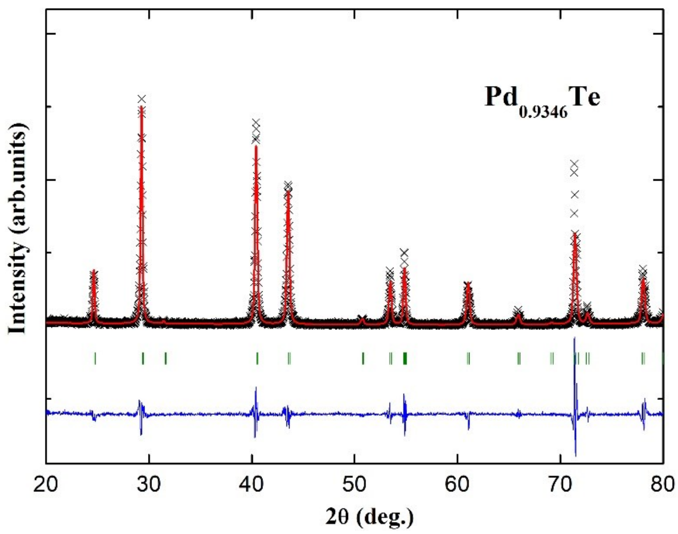

Fig S14. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 6.54 %).

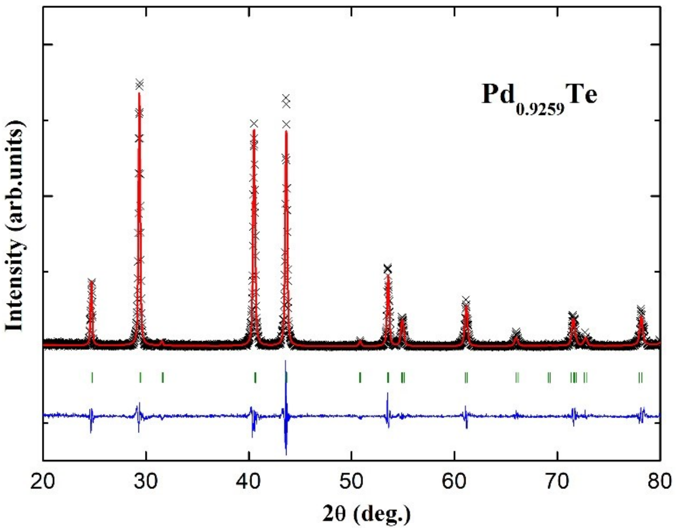

Fig S15. Le Bail refinement plot of $Pd_{1-y}Te$ (y = 7.41 %).

2 Estimation of the lower and upper critical fields

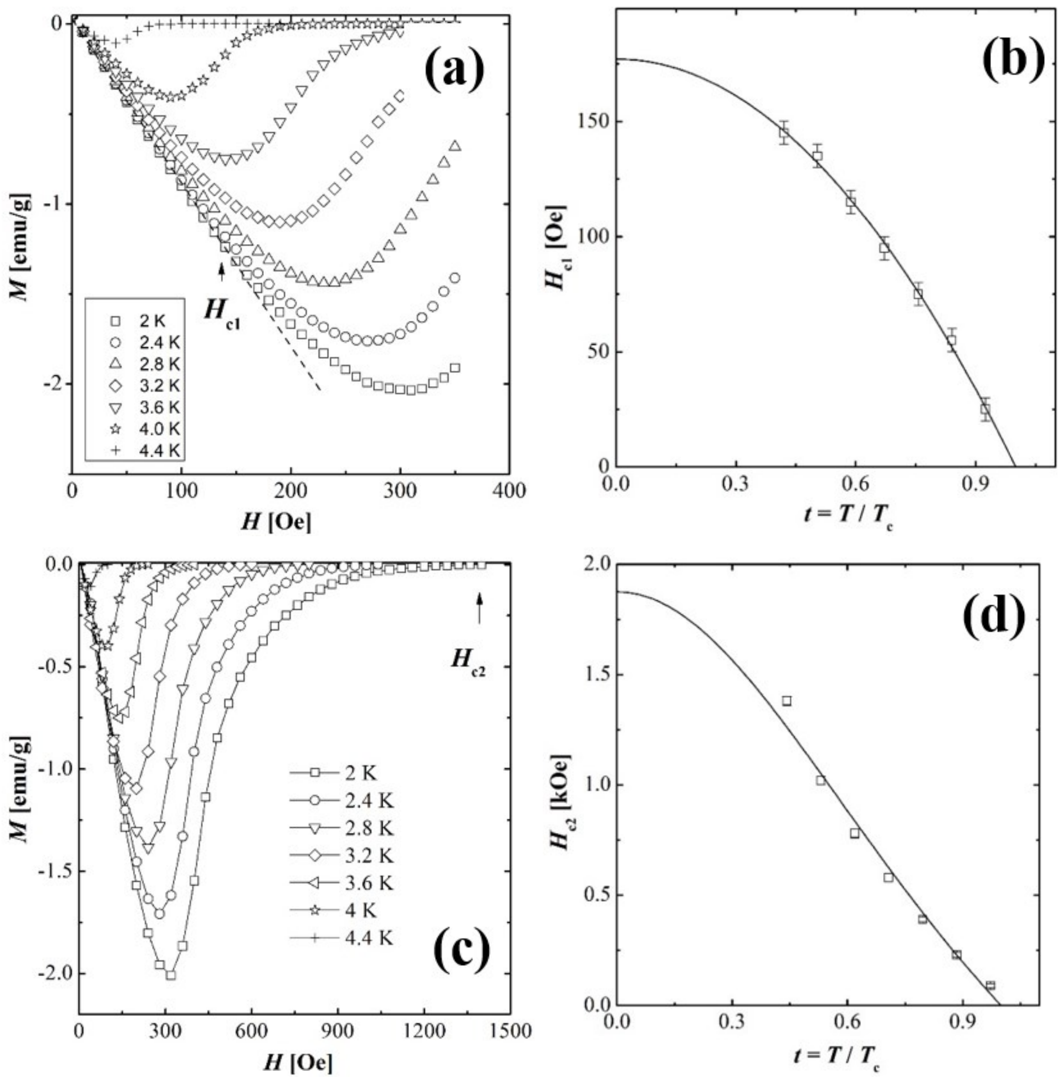

Fig S16. (a) *M–H* plots of PdTe at various temperatures. (b) H_{c1} of PdTe against normalized *t* is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) *M–H* plots of PdTe in higher fields at fixed Ts. (d) H_{c2} of PdTe against *t* is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.

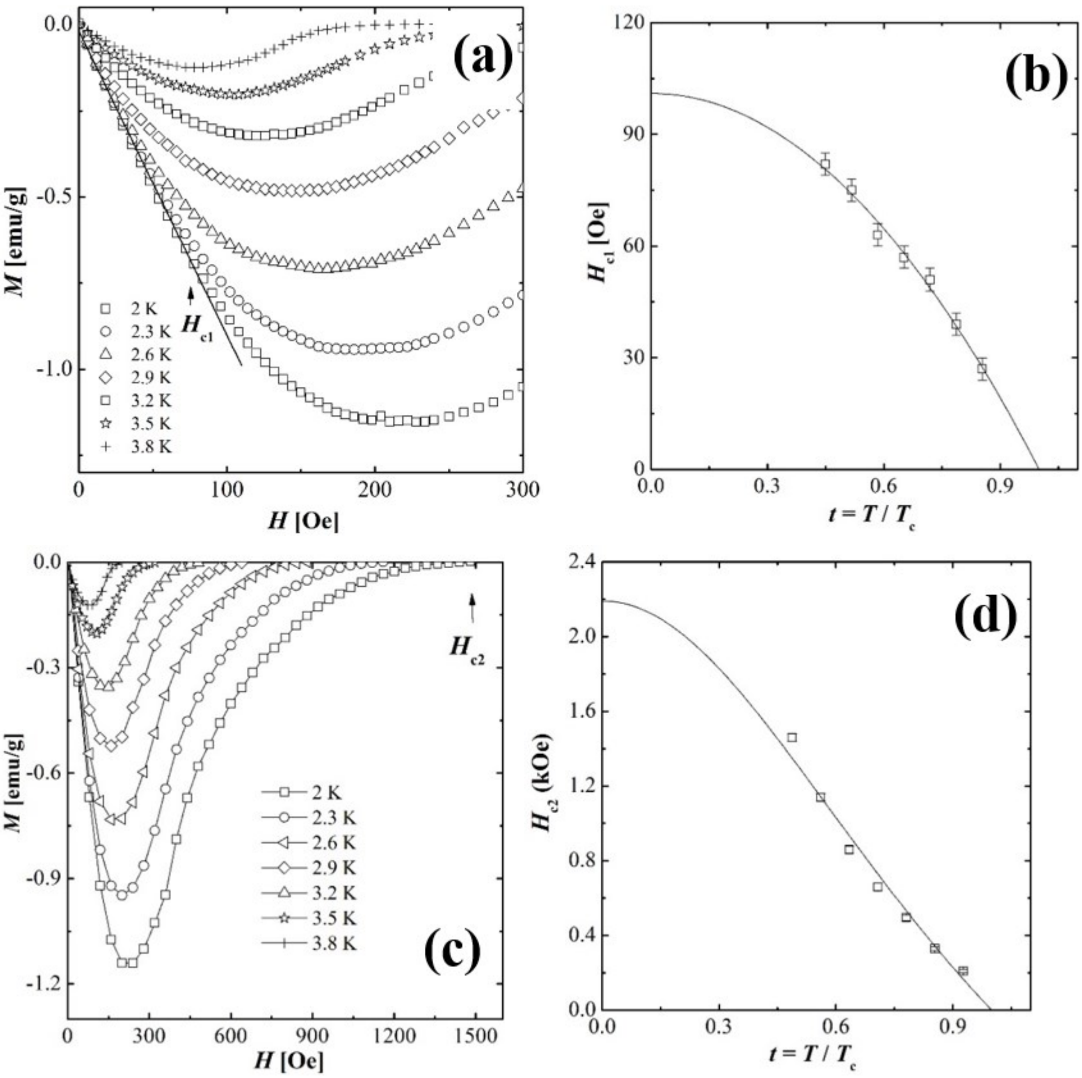

Fig S17. (a) *M–H* plots of $PdTe_{1-x}Sb_x$ ($x = 0.05$) at various temperatures. (b) H_{c1} of $PdTe_{0.95}Sb_{0.05}$ against normalized *t* is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) *M–H* plots of $PdTe_{0.95}Sb_{0.05}$ in higher fields at fixed Ts. (d) H_{c2} of $PdTe_{0.95}Sb_{0.05}$ against *t* is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.

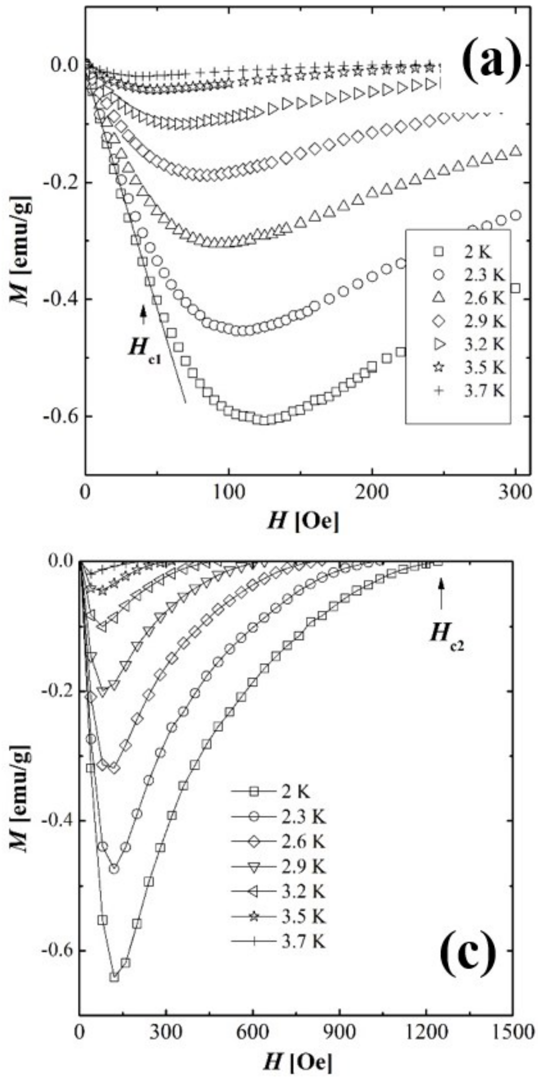

Fig S18. (a) *M–H* plots of $PdTe_{1-x}Sb_x$ (x = 0.1) at various temperatures. (b) H_{c1} of $PdTe_{0.9}Sb_{0.1}$ against normalized t is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) *M–H* plots of $PdTe_{0.9}Sb_{0.1}$ in higher fields at fixed Ts. (d) H_{c2} of $PdTe_{0.9}Sb_{0.1}$ against t is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.

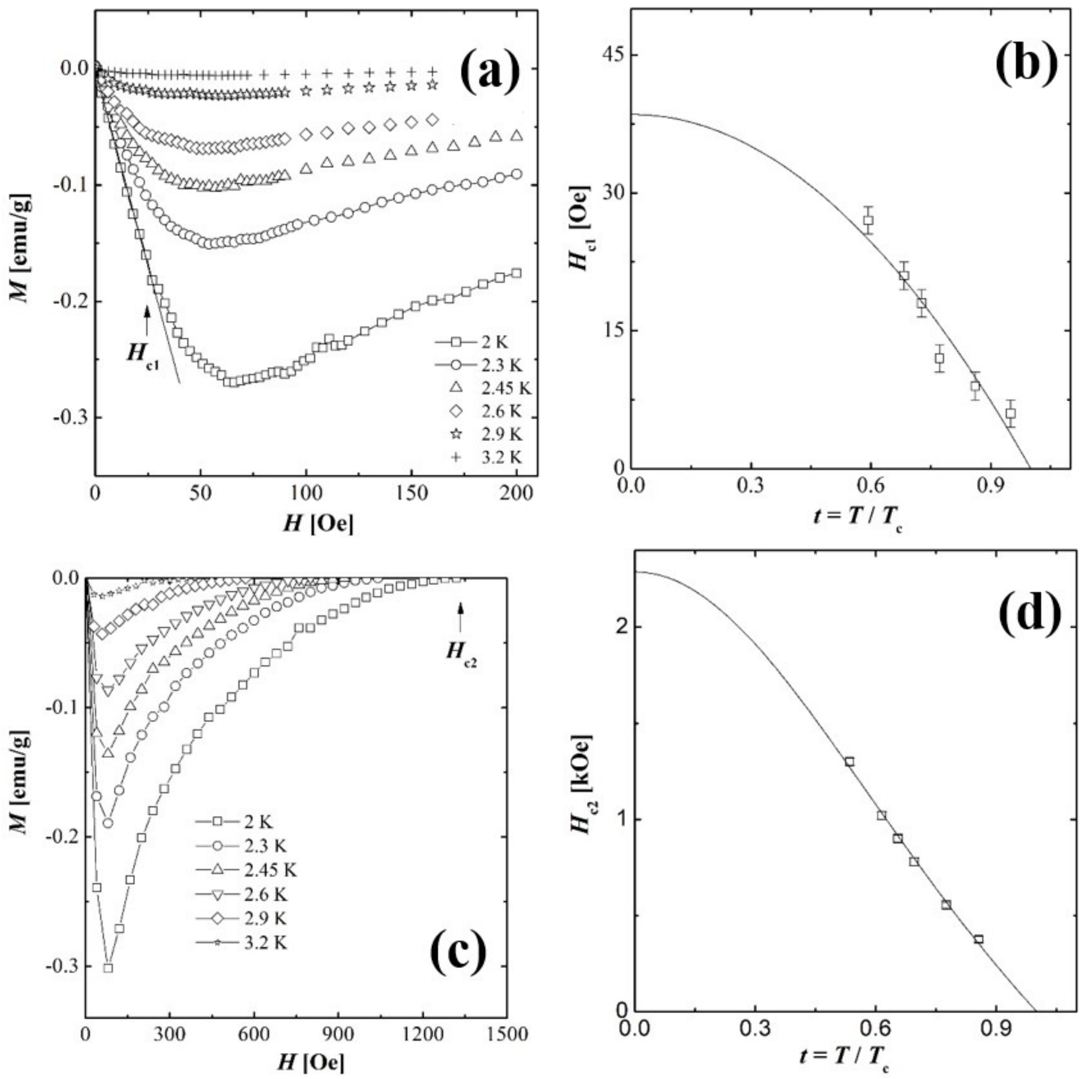

Fig S19. (a) *M–H* plots of $PdTe_{1-x}Sb_x$ (x = 0.12) at various temperatures. (b) H_{c1} of $PdTe_{0.88}Sb_{0.12}$ against normalized t is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) *M–H* plots of $PdTe_{0.88}Sb_{0.12}$ in higher fields at fixed Ts. (d) H_{c2} of $PdTe_{0.88}Sb_{0.12}$ against t is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.

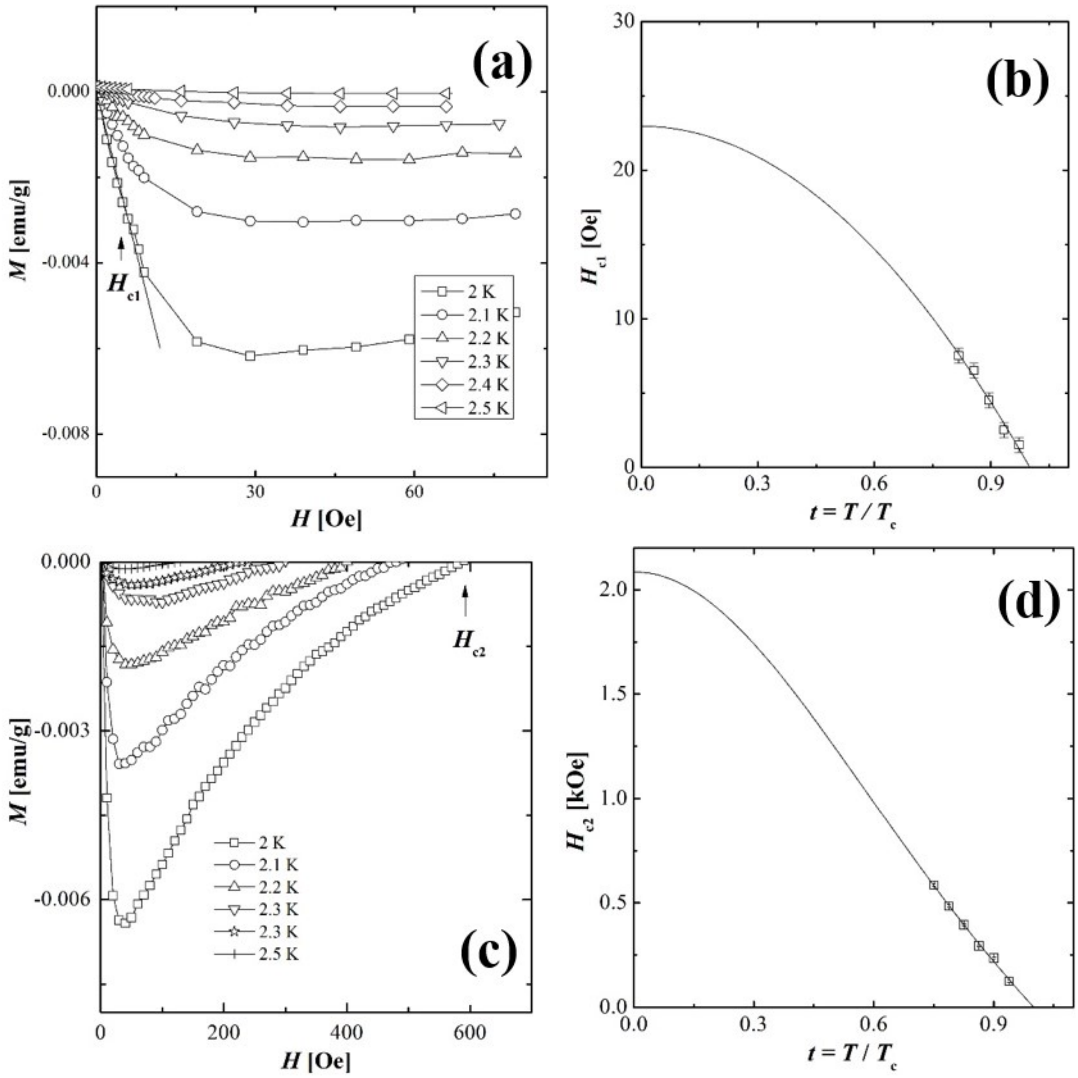

Fig S20. (a) *M–H* plots of $PdTe_{1-x}Sb_x$ (x = 0.15) at various temperatures. (b) H_{c1} of $PdTe_{0.85}Sb_{0.15}$ against normalized t is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) *M–H* plots of $PdTe_{0.85}Sb_{0.15}$ in higher fields at fixed Ts. (d) H_{c2} of $PdTe_{0.85}Sb_{0.15}$ against t is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.

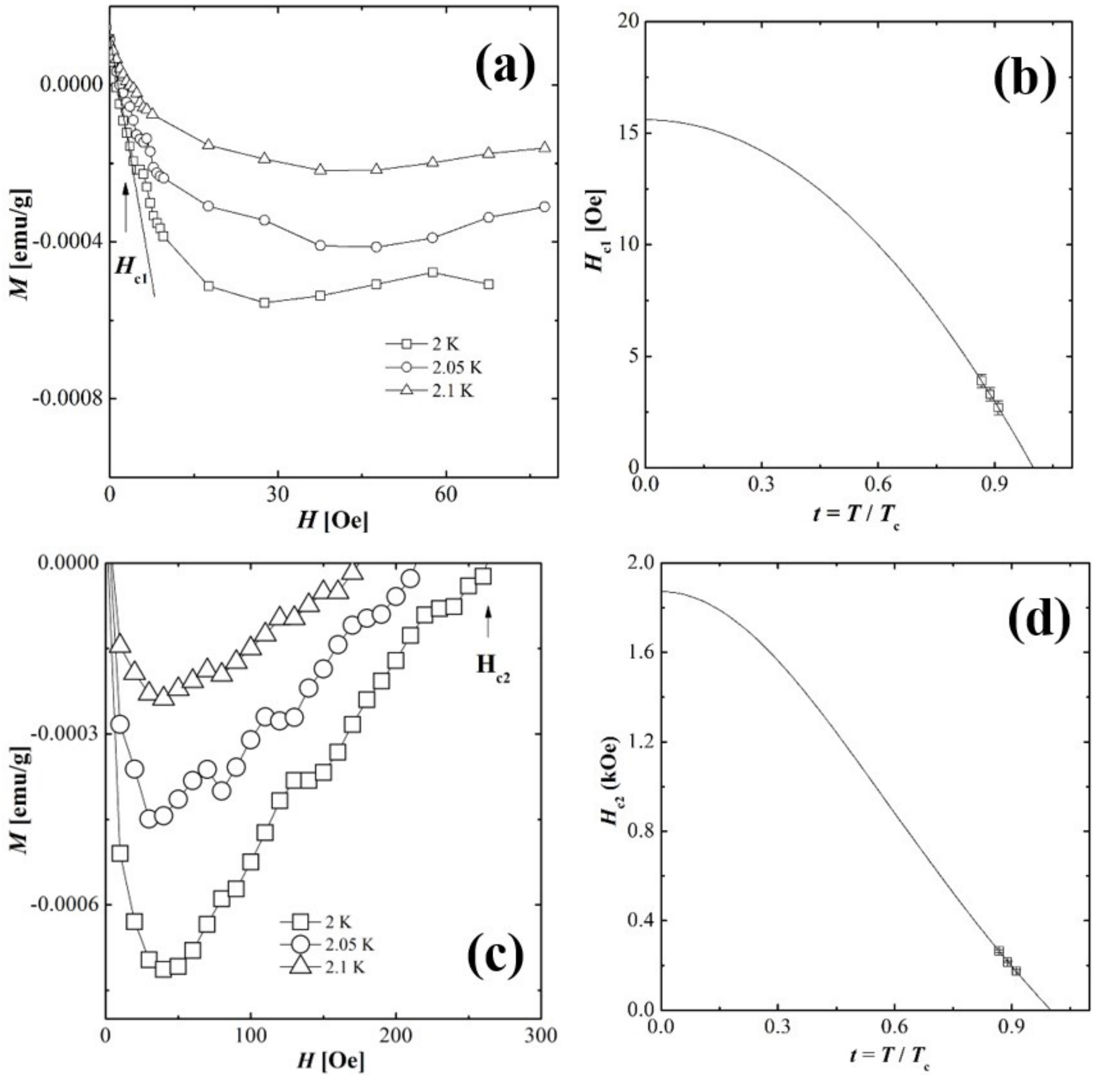

Fig S21. (a) M–H plots of $PdTe_{1-x}Sb_x$ (x = 0.17) at various temperatures. (b) H_{c1} of $PdTe_{0.83}Sb_{0.17}$ against normalized t is depicted and fitted using the formula $H_{c1}(T) = H_{c1}(0) * (1 - t^2)$.(c) M–H plots of $PdTe_{0.83}Sb_{0.17}$ in higher fields at fixed Ts. (d) H_{c2} of $PdTe_{0.83}Sb_{0.17}$ against t is depicted and fitted using the formula $H_{c2}(t) = H_{c2}(0) * [\frac{1 - t^2}{1 + t^2}]$.