

## **Enhancing thermoelectric performance of $\text{Ti}_2\text{FeNiSb}_2$ double half-Heusler alloy through excess Ni-induced full-Heusler nanoprecipitates**

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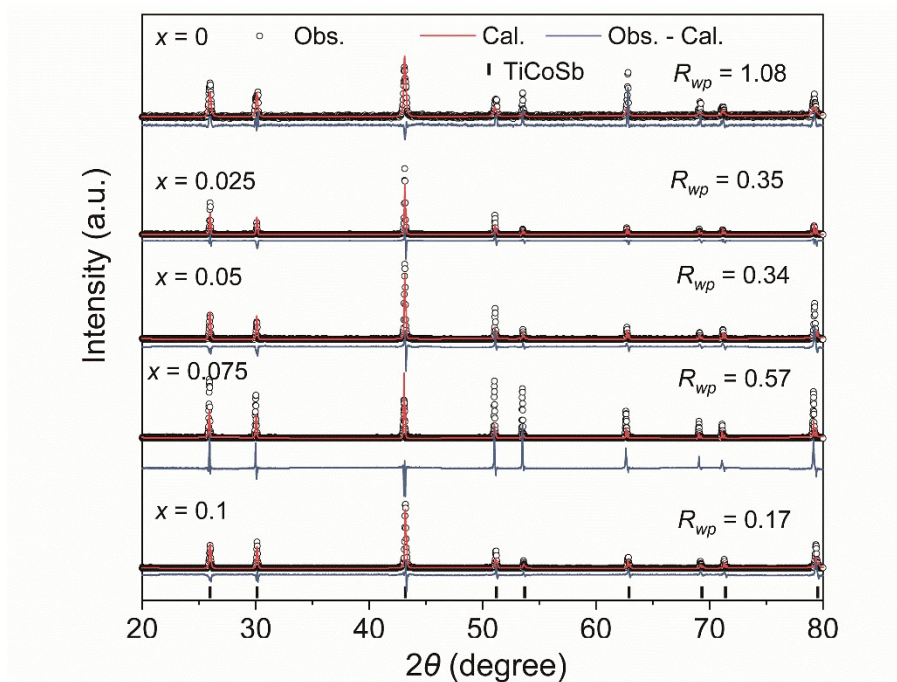


Fig. S1. Rietveld Refinement of XRD patterns for  $\text{Ti}_2\text{Ni}_{1+x}\text{FeSb}_2$  ( $x = 0$  to  $0.1$ ) samples based on  $\text{TiCoSb}$  phase using Profex software package.

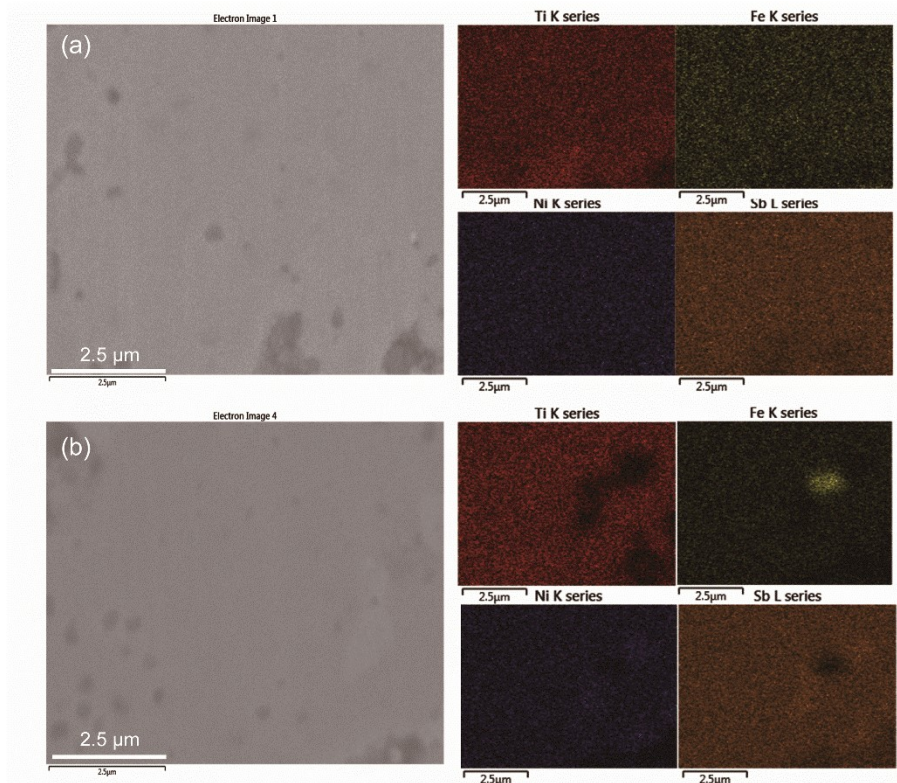


Fig. S2. SEM images and EDS mapping for (a)  $\text{Ti}_2\text{Ni}_{1.05}\text{FeSb}_2$  and (b)  $\text{Ti}_2\text{Ni}_{1.1}\text{FeSb}_2$  samples.

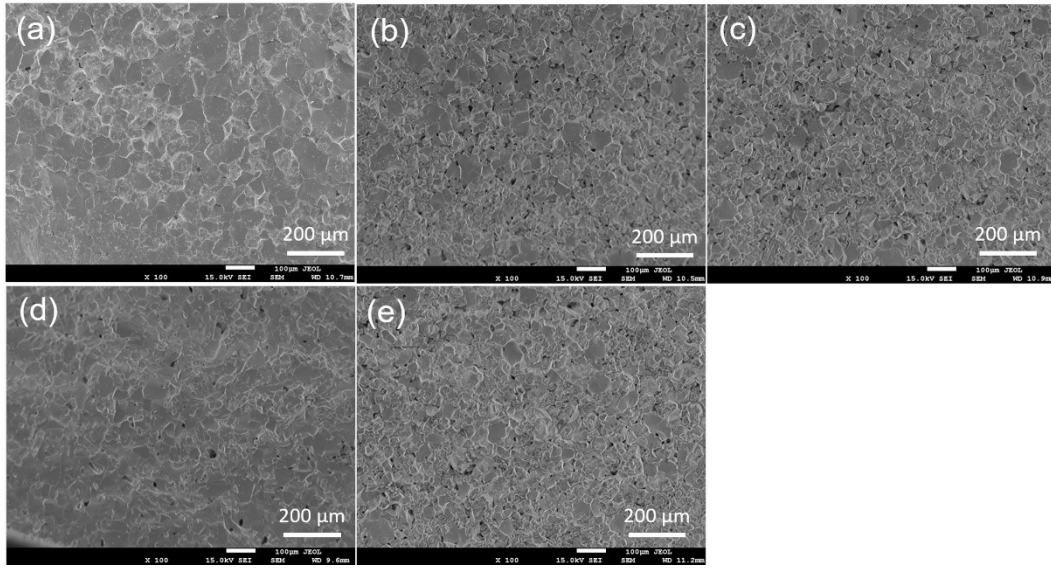


Fig. S3. SEM image for the unpolished fracture structure of (a)  $\text{Ti}_2\text{FeNiSb}_2$  prepared by spark plasma sintering, (b)  $\text{Ti}_2\text{FeNi}_{1.025}\text{Sb}_2$ , (c)  $\text{Ti}_2\text{FeNi}_{1.05}\text{Sb}_2$ , (d)  $\text{Ti}_2\text{FeNi}_{1.075}\text{Sb}_2$  and (e)  $\text{Ti}_2\text{FeNi}_{1.1}\text{Sb}_2$  prepared by cold isostatic pressure.

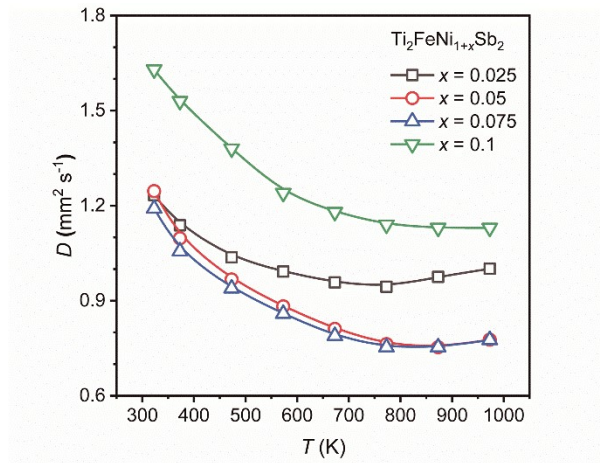


Fig. S4. Temperature dependent thermal diffusivity for  $\text{Ti}_2\text{FeNi}_{1+x}\text{Sb}_2$  ( $x = 0.025, 0.05, 0.075$  and  $0.1$ ) samples.