

Growth, electronic, and magnetic properties of half-Heusler  $\text{CoTi}_{1-x}\text{Fe}_x\text{Sb}$

Supplemental Figures

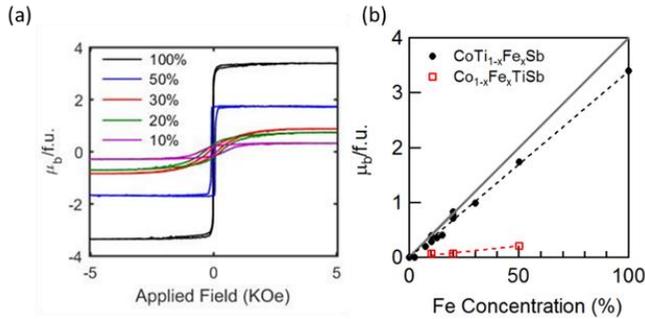


FIG. 1 (a) SQUID magnetic hysteresis curves of 15 nm thick  $\text{CoTi}_{1-x}\text{Fe}_x\text{Sb}$  films for  $x=0.1, 0.2, 0.3, 0.5,$  and  $1$  at  $5\text{ K}$ . (b) Magnetic moment per formula unit dependence on Fe concentration. Black solid circles and red open squares are data points for  $\text{CoTi}_{1-x}\text{Fe}_x\text{Sb}$  and  $\text{Co}_{1-x}\text{Fe}_x\text{TiSb}$  films respectively. Solid grey, dashed black, and dashed red lines correspond to  $4\ \mu_B/\text{Fe atom}$ , linear fit to the  $\text{CoTi}_{1-x}\text{Fe}_x\text{Sb}$  data, and linear fit to the  $\text{Co}_{1-x}\text{Fe}_x\text{TiSb}$  data respectively.

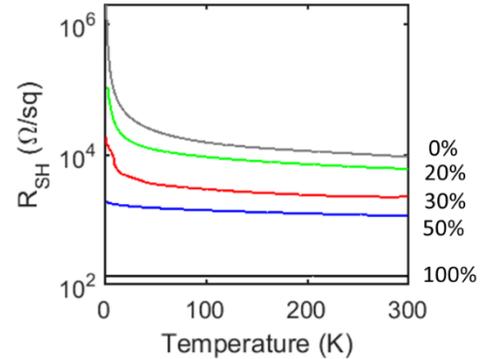


FIG 3 Temperature dependent longitudinal sheet resistance measurements for 15 nm thick  $\text{CoTi}_{1-x}\text{Fe}_x\text{Sb}$  films  $x=0, 0.2, 0.3, 0.5,$  and  $1$ .

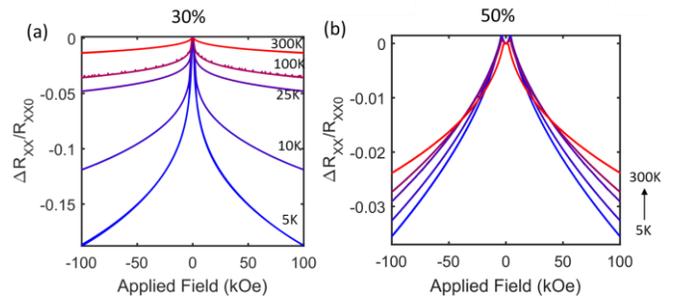


FIG 4. Longitudinal magnetoresistance (MR) curves for (a)  $\text{CoTi}_{0.7}\text{Fe}_{0.3}\text{Sb}$  and (b)  $\text{CoTi}_{0.5}\text{Fe}_{0.5}\text{Sb}$  with the applied magnetic field out of plane for  $5, 10, 25, 100,$  and  $300\text{ K}$ . The MR is defined as  $(R_{xxH} - R_{xx0})/R_{xx0}$  where  $R_{xxH}$  and  $R_{xx0}$  are the longitudinal resistances measured at external magnetic field and zero magnetic field respectively.

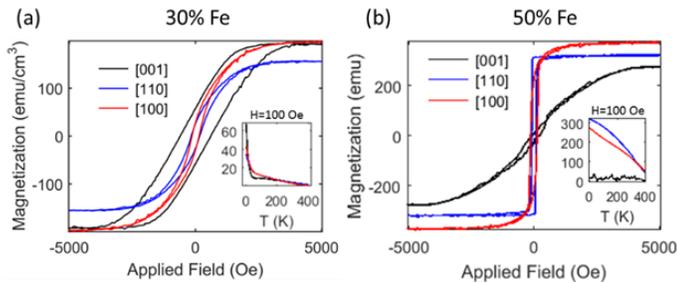


FIG 2. Magnetization hysteresis loops for (a)  $\text{CoTi}_{0.7}\text{Fe}_{0.3}\text{Sb}$  and (b)  $\text{CoTi}_{0.5}\text{Fe}_{0.5}\text{Sb}$  with the applied magnetic field along different crystallographic directions.  $[110]$  and  $[100]$  are in-plane directions while  $[001]$  is out-of-plane. The insets show the temperature dependence for  $5\text{-}400\text{ K}$  of the magnetic moment with  $100\text{ Oe}$  applied field.