Superconducting property of Sn$_{1-x}$In$_x$Te compounds KA-RYEONG KIM, Kyung-Hee Univ. — SnTe has been known as a topological crystalline insulator (TCI). TCI is produced by the inversion symmetry of crystal, instead of time-reversal symmetry and Z2 invariance. Recently, the superconducting properties were discovered in In-doped Sn$_{1-x}$In$_x$Te compounds, which is believed to be the first superconductor with TCI. We synthesized Sn$_{1-x}$In$_x$Te ($x = 0.1, 0.2, 0.3, 0.4, 0.5, 0.6$ and $0.7$ ) single like crystals by the flux method. From the electrical resistivity, magnetization, and heat capacity measurements, we obtained superconducting properties such as the critical temperature, upper-critical magnetic fields, coherence length, and Ginzburg-Landau parameters with respect to In-doping concentrations of Sn$_{1-x}$In$_x$Te in terms of Ginzburg-Landau and Bardeen-Cooper-Shrieffer (BCS) theory.

Ka-Ryeong Kim
Kyung-Hee Univ.

Date submitted: 12 Nov 2014