

## PCP2-11

### Synthesis and superconducting property evaluation of Pb-substituted BiS-based superconductor $\text{LaO}_{1-x}\text{F}_x\text{BiS}_2$

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BiS<sub>2</sub>-based superconductor  $\text{LaO}_{1-x}\text{F}_x\text{BiS}_2$  has a layered crystal structure composed of electron-supply layers of La (O,F) layers and conductive layers of two BiS<sub>2</sub> layers. Although superconductivity does not appear in  $\text{LaOBiS}_2$ , it shows superconductivity about 3K by replacing a part of O ions with F ions. In addition, the superconducting transition temperature of  $\text{LaO}_{0.5}\text{F}_{0.5}\text{BiS}_2$  is increased by replacing a part of Bi ions with Pb ions, which is called as Pb substitution effect. [1] While Pb substitution effect was confirmed in  $\text{LaO}_{0.5}\text{F}_{0.5}\text{BiS}_2$ , it has not been known whether the same effect occurs in  $\text{LaO}_{1-x}\text{F}_x\text{BiS}_2$  with different fluorine content so far.

Here, we performed Pb substitution to  $\text{LaO}_{1-x}\text{F}_x\text{BiS}_2$  with various fluorine content to investigate the Pb substitution effect to superconducting properties of these materials. Polycrystalline samples used in this investigation were prepared by solid state reaction in evacuated quartz tube. The superconducting properties for the obtained samples were evaluated from X-ray diffraction, electrical resistivity, and magnetic susceptibility measurements. In this presentation, we will discuss the effect of Pb substitution for the superconducting properties in  $\text{LaO}_{1-x}\text{F}_x\text{BiS}_2$  while comparing results of that of  $\text{LaO}_{0.5}\text{F}_{0.5}\text{BiS}_2$ .

[1] S. Otsuki *et al.*, Solid State Commun., 270 17-21(2018)