

Physical properties of the novel layered cobalt oxyphosphide $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$

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A novel layered cobalt oxyphosphide $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$ crystallizes in a layered structure which represents an alternative stack of ThCr_2Si_2 type Co_2P_2 layer and K_2NiF_4 type $\text{Sr}_4\text{Sc}_2\text{O}_6$ layer. This material has a similar structure to that of $\text{Sr}_4\text{Sc}_2\text{Fe}_2\text{P}_2\text{O}_6$ which exhibits superconductivity below 17 K¹.

The resistivity of $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$ is 4.5 m Ω cm at room temperature, and decreases with decreasing temperature. The thermoelectric power of $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$ is -12 $\mu\text{V}/\text{K}$ at room temperature, and it decreases with decreasing temperature, and rapidly increases below 50 K. The thermoelectric power of $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$ demonstrates metallic temperature dependence. These features are similar to those of $\text{Sr}_4\text{Sc}_2\text{Fe}_2\text{As}_2\text{O}_6$ ², while polarity of the thermoelectric power does not become positive in $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$. In our presentation, we will demonstrate magnetic properties of $\text{Sr}_4\text{Sc}_2\text{Co}_2\text{P}_2\text{O}_6$.

¹H. Ogino *et al.* Supercond. Sci. Technol. **22** 075008 (2009).

²Y. L. Xie *et al.* Europhys. Lett. **86** 57007 (2009).