

## Elastic anomalies around MI transition of $\text{SmRu}_4\text{P}_{12}$

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We have measured the elastic constants by means of ultrasonic measurement in polycrystalline and single crystalline  $\text{SmRu}_4\text{P}_{12}$ , respectively. Both  $(C_{11} - C_{12})/2$  and  $C_{44}$  elastic constants show a large anomaly below the metal-insulator transition  $T_{\text{MI}} = 16 \text{ K}$  [1]. Figure 1 shows the temperature dependence of elastic constants  $(C_{11} - C_{12})/2$  of single crystalline  $\text{SmRu}_4\text{P}_{12}$  in the magnetic fields. The elastic constants  $(C_{11} - C_{12})/2$  has a minimum around 10K. The shape of this minimum becomes sharper with increasing the magnetic field. Furthermore, a hump appears at the onset of metal-insulator transition. We will discuss the ground state of the crystalline electric field multiplet of Sm ion, and relation between metal-insulator transition and quadrupole ordering.

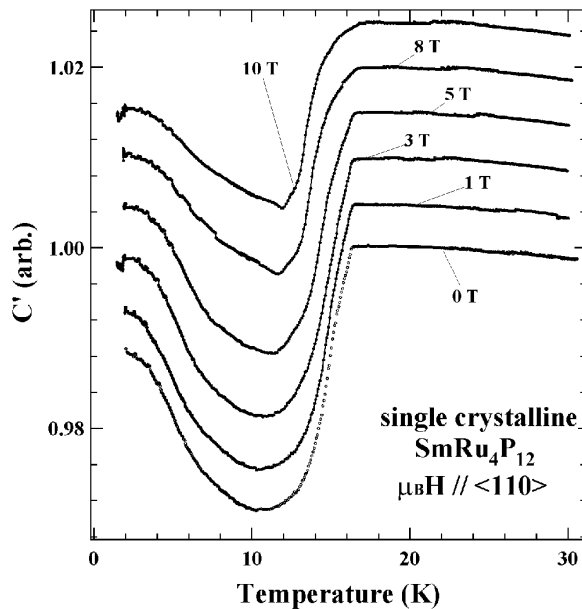


Figure 1: Temperature dependence of elastic constants  $(C_{11} - C_{12})/2$  of single crystalline  $\text{SmRu}_4\text{P}_{12}$  in the magnetic fields.

[1] C. Sekine, T. Uchiyama, I. Shirovani and T. Yagi: Science and Technology of High Pressure, ed. M. H. Manghnani, W. J. Nellis and M. F. Nicol, Universities Press, Hyderabad, India(2000)826.