

## Search for lattice anomaly of $\text{PrFe}_4\text{P}_{12}$ under high pressure

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The filled-skutterudite compound  $\text{PrFe}_4\text{P}_{12}$  shows very striking Kondo-effect among Pr-compounds[1]. From the neutron diffraction experiment, it is found that its ordered state in low temperature region is antiferro-quadrupolar(AFQ) ordered state[2], which is supported by the appearance of the satellite reflection for lattice distortion vector  $\mathbf{q}=(100)$  due to the displacement of Fe-ions from X-ray diffraction[3]. Recently, the resistivity under high pressure was measured[4]. This result shows that an insulator phase appears in the low temperature region above 2.4GPa. In order to get the microscopic information about the insulator phase under pressure, we performed synchrotron radiation X-ray diffraction under high pressure at KEK-PF BL1B.

Fig.1 shows peak profiles under 0.7GPa and 5.7GPa, which are one-dimensionalized from imaging plate(IP) data obtained by a rotating crystal method. Fig.2 shows pressure dependence of lattice constant. From this results, the bulk modulus of  $\text{PrFe}_4\text{P}_{12}$  is determined to be 178GPa, of which value is good agreement with the result of the measurement for elastic constant[5]. Further X-ray experiment under high pressure is now in progress.

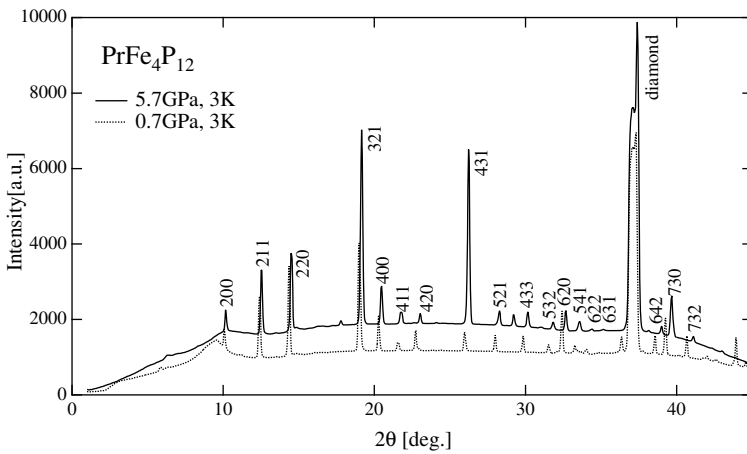


Figure 1: Peak profiles under 0.7GPa and 5.7GPa

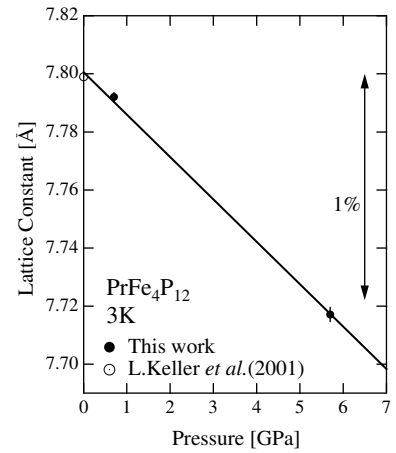


Figure 2: Pressure dependence of lattice constant

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