

## Pressure Effect on the Competing Charge Ordered States in $\theta$ -(BEDT-TTF)<sub>2</sub>CsZn(SCN)<sub>4</sub>

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In recent years, the quasi two-dimensional organic salt  $\theta$ -(BEDT-TTF)<sub>2</sub>CsZn(SCN)<sub>4</sub> attracts a much interest because of its short-range-charge-ordered states which exhibits largely nonlinear conductivity below 20 K.[1] The compound contains two kinds of short-range-charge-ordered (SRO) modulations  $q_1=(2/3 \ k \ 1/3)$  and  $q_2=(0 \ 0 \ 1/2)$  below 120 K. These SRO modulations are competing each other. The modulation  $q_2$  is responsible for insulating behavior and suppressed by current.[1] On the other hand, it was pointed out that intersite Coulomb interaction,  $V_{ij}$  plays an important role in establishing charge ordered state.[2] The intersite Coulomb interaction will be strongly depended on the distance between BEDT-TTF molecules.

In this study, we investigated the pressure effect on this charge ordered state using by X-ray diffraction experiments. Pressure was applied up to 1.2 GPa. Under each pressure, long-range-ordered superstructure was detected. Modulation wave vectors were observed in the temperature range from 2 to 300 K under each pressure. These modulation wave vectors have tendency to emerges around the line of  $-2a^*+c^*$  as shown in Fig.1. Such sensitivity of wave vector to the pressure reminds us to *the devil's staircase*.

[1] K. Inagaki *et al.*, J. Phys. Soc. Jpn. 73 (2004) 3364, and F. Sawano *et al.*, Nature 437 (2005) 522.

[2] H. Seo, J. Phys. Soc. Jpn. 69 (2000) 805.

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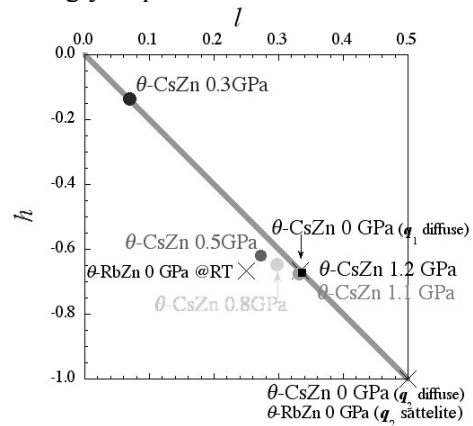


Fig.1. Position of the modulation wave vectors in  $h$ - $l$  plane at 3 K