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Raman scattering in an anisotropic triangular spin lattice system
HIDEO KISHIDA, YUTO NAKAMURA, KAZUSHI MIZUKOSHI, Nagoya University, YUKIHIRO YOSHIDA, Meijo University, GUNZI SAITO, Meijo University and Toyota Physical and Chemical Research Institute — Spin-disordered quantum phases in an anisotropic triangular spin lattice system, κ-(BEDT-TTF)$_2$B(CN)$_4$, were recently reported [1]. In this compound, the ratio of the two transfer integrals, t'/t, reaches 1.44 at 298 K and 1.80 at 100 K. Its optical conductivity in the infrared region is anisotropic. The temperature dependence of the optical anisotropy correlates with that of t'/t. From the experimentally evaluated optical anisotropy, we expect that the values of t'/t are larger than 1.80 in the lower temperature region. For this compound, we observe the polarization-dependent broad Raman scattering signals below 600 cm^{-1} at 10 K. In such a wavenumber region, we have observed the magnetic Raman signals in triangular spin lattice systems such as κ-(BEDT-TTF)$_2$X [2] and β'-type Pd(dmit)$_2$ salts [3]. By comparison with them, we discuss the origin of the Raman signals observed for κ-(BEDT-TTF)$_2$B(CN)$_4$. [1] Y. Yoshida *et al.*, Nat. Phys. **11**, 679 (2015). [2] Y. Nakamura *et al.*, J. Phys. Soc. Jpn. **83**, 074708 (2014). [3] Y. Nakamura *et al.*, J. Phys. Soc. Jpn. **84**, 044715 (2015).

Hideo Kishida
Nagoya University

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