Electron Spin Resonance in Triangular Spin Tubes

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We performed electron spin resonance (ESR) on polycrystalline S = 3/2 spin compounds consisting of equilateral and non-equilateral triangular spin tubes in CsCrF₄ and α -KCrF₄, respectively. In CsCrF₄, a gapless spin-liquid ground state was realized at 1.5 K.¹ A symmetrical ESR line appeared at 280 K because of the small magnetic anisotropy. We found that linewidth of the ESR spectra drastically increases below 100 K and appears to diverge around 50 K although no magnetic long-range order occurred down to 1.5 K. Furthermore, temperature dependence of integrated intensity of the ESR spectra indicates that the intrinsic ESR spectra can not be observed below 40 K. On the other hand, in α -KCrF₄, successive antiferromagnetic long-range order occurred at $T_{N1} = 2.5(1)$ K and $T_{N2} = 4.0(1)$ K. ESR spectra slightly change not only around T_{N2} but also around T_{N1} . We found that typical temperature dependences of g-factor and linewidth appear above T_{N2} , but such tendencies change at T_{N1} and T_{N2} because antiferromagnetic long-range order occurs at T_{N2} and the spin structure varies slightly at T_{N1} . ¹H. Manaka *et al.*, J. Phys. Soc. Jpn. **78**, 093701 (2009).