

**ESR Study of Spin Correlation in S=1/2 Organic Two Leg Ladder Compound
[Ph(NH₃)][18]crown-6[Ni(dmit)₂]**

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Non magnetic impurity effect on the organic two leg ladder antiferromagnet [Ph(NH₃)][18]crown-6[Ni(dmit)₂], whose spin gap above the singlet ground state is about 120 K [1], has been investigated by X-band ESR measurement in the temperature region from 4.5 to 273 K. By substituting the magnetic [Ni(dmit)₂] site by [Au(dmit)₂], the non magnetic impurity is introduced into the system and it induces the unpaired S=1/2 spin, which is suggested by the paramagnetic increase of the magnetic susceptibility below 30 K [1]. Angular dependence ESR measurement of the single crystal substituted by 2.9 % non magnetic impurity shows the strong EPR signal A with g₁=1.96 and g₂=2.17 [2]. However, satellite signals start to appear on both sides of signal A below 30 K. The splitting between the satellite signals and the signal A turns out to be much larger than the typical hyperfine splitting of the order of 20 G. Detailed angular dependence ESR measurement at 4.2 K suggest that the satellite signals are coming from the effective S=1 spin with the different effective uniaxial anisotropy D. These satellite signals can be understood by considering the effective ferromagnetic spin correlation between two S=1/2 spins through the singlet sites, which is similar to the case of the non magnetic ion doped Haldane system [3], and the signal A corresponds to the isolated S=1/2 spins. The details of our ESR results and analyses will be presented.

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