

Studies of organic antiferromagnet, D8- κ -(BEDT-TTF)₂Cu[N(CN)₂]Br by using μ SR methods

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Layered organic compounds, κ -(BEDT-TTF)₂X has been attracting attention as a model system showing a first-order phase transition from antiferromagnet (AFI) to superconductor (SC). In AFI-SC phase diagram, D8- κ -(BEDT-TTF)₂Cu[N(CN)₂]Br is regarded as antiferromagnet material that situates extremely close to the border of AFI-SC transition. [Fig.1] In previous study [1], cooling rate effects the physical properties of this material: variation of it induces the change of volume fraction of SC and T_c due to glass transition around 80K. μ SR methods are quite remarkable techniques for magnetic studies, but large amount of single crystals are necessary for this experiment so that we prepared crystals over 450mg by using electrochemical oxidation. μ SR were performed under transverse-field and zero field on this material at RIKEN-RAL Muon Facility in UK. Also cooling rate has been changed to distinguish the properties of material. We succeeded the first observation of antiferromagnetic signal for κ -(BEDT-TTF)₂X compounds. [Fig.2] The results of changing cooling rate, and the value of volume fraction will be reported.

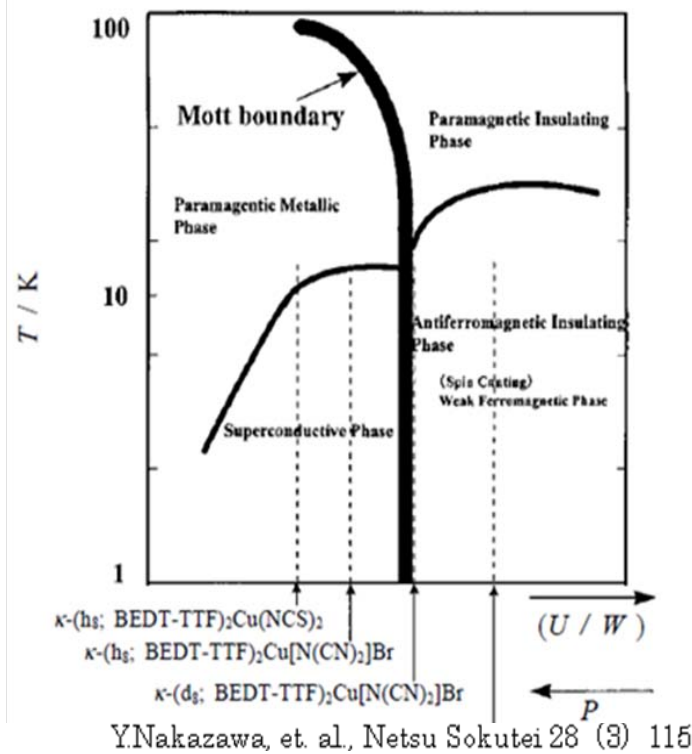


Fig.1: Phase diagram of κ -(BEDT-TTF)₂X

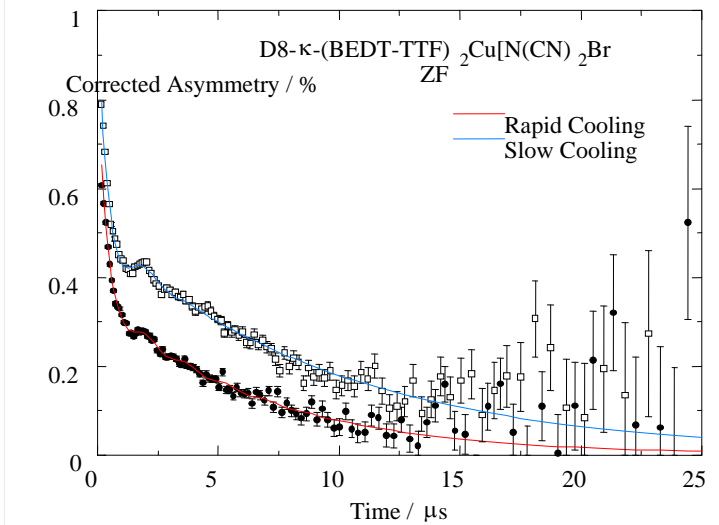


Fig.2: Asymmetry of D8- κ -(BEDT-TTF)₂Cu[N(CN)₂]Br 2K

[1] H. Taniguchi et al., Phys. Rev. B. **59**, 8425 (1999)