Effect of Pressure on Conductive Anion-Radical Salt, $(DMe\text{-}DCNQI)_2Cu$

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A series of anion radical salts, $(DCNQI)_2Cu$, where DCNQI is *N*, *N*-dicyanoquinonediimine, have been extensively investigated because of their peculiar physical phenomena such as heavy-fermion-like behavior and the Metal-Insulator transition [1]. The hybridization between the wide 1D $2p\pi$ bands and the narrow $3d$ bands is a key factor in understanding electronic properties of these systems.

One of these salts, $(DMe\text{-}DCNQI)_2Cu$, (DMe-DCNQI = 2,5-dimethyl-DCNQI) has an unusual pressure-temperature ($P-T$) phase diagram (Fig. 1). At ambient pressure, this material shows metallic behavior down to 450 mK. Peculiar to $(DMe\text{-}DCNQI)_2Cu$, an insulating phase is induced by the application of pressure higher than 100 bar [2]. This unusual $P-T$ phase diagram can be reproduced by the *chemical pressure effect* using selectively deuterated compounds [3]. The fully deuterated sample of $(DMe\text{-}DCNQI)_2Cu$, in which the chemical pressure corresponds to 512 bar, exhibits the antiferromagnetic ordering below 8 K [4].

Recently, we have developed a high-pressure μSR setup for the RIKEN-RAL Muon Facility and successfully observed a sign of magnetic ordering of $(DMe\text{-}DCNQI)_2Cu$ under 500 bar by means of the high-pressuregetup. In this presentation, we will show the experimental results of high-pressure μSR measurements for $(DMe\text{-}DCNQI)_2Cu$.

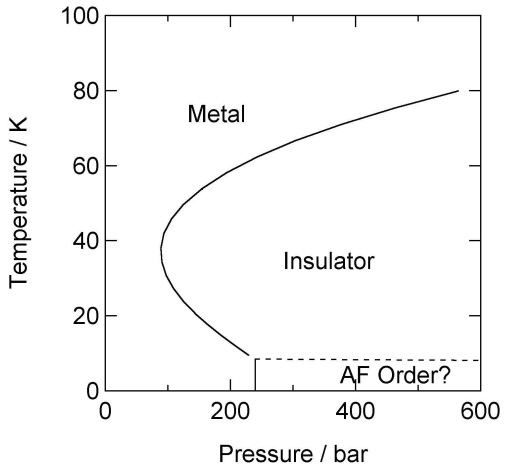

Fig.1: P-T phase diagram for $(DMe\text{-}DCNQI)_2Cu$.

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