

Abstract Submitted
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Phase diagram of pressure-induced superconductor β -(BDA-TTP) $_2$ MX_4 (M =Fe, Ga and X =Cl, Br) with localized magnetic moments¹ E.S. CHOI, D. GRAF, T. TOKUMOTO, J.S. BROOKS, NHMFL/Florida State Univ., JUN-ICHI YAMADA, University of Hyogo — We have investigated transport and magnetization properties of β -(BDA-TTP) $_2$ MX_4 (M =Fe, Ga and X =Cl, Br) as a function of pressure, temperature and magnetic field. The title material undergoes metal-insulator transitions above 100 K at ambient pressure. The insulating phase is suppressed with pressure and superconductivity eventually appears above P_c = 4.5 kbar (X =Cl) and 13 kbar (X =Br). The general temperature-pressure (TP) phase diagram is similar each other, while higher pressure is required for X =Br compounds to suppress the insulating state and induce the superconductivity. Pressure dependent DC magnetization studies on β -(BDA-TTP) $_2$ FeCl $_4$ compound revealed that the AFM ordering persist well above P_c . In spite of similarity of phase diagram between M =Fe and M =Ga compounds, magnetoresistance results show distinct behaviors, which indicates the magnetic interaction with the conduction electrons are still effective. The comparison between X =Cl and X =Br compounds suggests the anion-size effect rather than the existence of localized magnetic moments plays more important role in determining the ground state.

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Eun Sang Choi
NHMFL/Florida State Univ.

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