

Magnetic Frustration in Iridium Spinel Compound CuIr_2S_4 : non-singlet ground state observed by μSR

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We demonstrate via a muon spin rotation experiment that the electronic ground state of the iridium spinel compound CuIr_2S_4 is not the presumed spin-singlet state but a novel paramagnetic state, showing a quasi-static spin glasslike magnetism below ~ 100 K. Considering the earlier indication that IrS_6 octahedra exhibit dimerisation associated with the metal-to-insulator transition below 230 K, the present result suggests that a strong spin-orbit interaction may be serving to preclude spin-singlet formation, leading to the ground state that accompanies magnetic frustration.

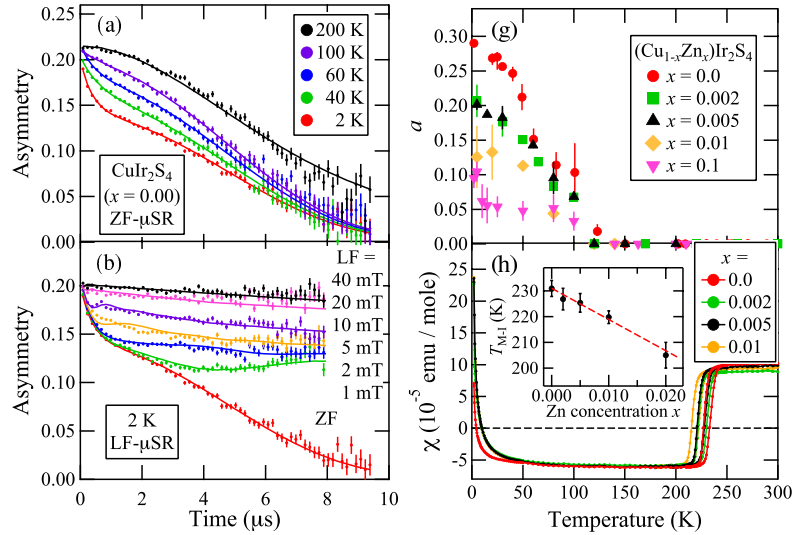


FIG. 1: Muon spin relaxation of CuIr_2S_4 . (a) temperature dependence and (b) magnetic field // muon spin dependence. (g) Temperature dependence of the relative amplitude of the muon relaxing component and (h) susceptibility

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