

Abstract Submitted
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An Investigation of the Spin Glass Properties of the Solid Solution $\text{CuAl}_{2-2x}\text{Ga}_{2x}\text{O}_4$ THOMAS BULLARD, UES Inc, JACILYNN BRANT, National Research Council/TheAir Force Research Laboratory, CHARLES EBBING, The University of Dayton Research Institute, NEIL DILLEY, J. HAMILTON, Quantum Design, TIMOTHY HAUGAN, The Air Force Research Laboratory — The complete anti-ferromagnetic oxide spinel solid solution between end members CuAl_2O_4 and CuGa_2O_4 has been synthesized. The crystallographic and magnetic properties are examined as Ga is replaced with iso-valent Al. Crystallographic results show the solid solution obeys Vegards law, and the cation distribution among the tetrahedral and octahedral sites matches well with prior results. The evolution of the magnetic susceptibility is examined as a function of temperature and doping percentage. Evidence is presented that indicates that the majority of the solution displays paramagnetic behaviour at high temperatures and spin glass behaviour below 3K. Specifically, a freezing temperature in the AC susceptibility, irreversibility in the DC magnetization, and relaxation dynamics in the presence of a changing applied field are observed.

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