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Study Of Fe(x)Zn(1-x)F2 Using Ising Model and Optical Faraday Rotation ARACELI LOPEZ-GARIBAY, University of California, Santa Clara, YVONNE RODRIGUEZ, University of California, Santa Clara, DAVID P. BELANGER, University of California, Santa Clara — This study is to analyze the behavior of a diluted antiferromagnetic crystal, Fe(x)Zn(1-x)F2 with magnetic concentration x=0.40, under a magnetic field. Under a magnetic field we can analyze the phase transition critical behavior using the Random Field Ising Model (RFIM). The experiments will be done using the optical Faraday rotation (FR) technique with high precision thermometry. From the experimental results we will obtain a mapping of the phase diagram as well as hysteresis. The hysteresis is important to understand in detail since it is known to give very different results for field heating and field cooling procedures. Theory, simulations, and experiments on similar diluted antiferromagnetic crystals of different concentrations have been done. However, in this case, there is poor agreement between theory and simulations on the one hand and experiments on the other. Therefore, further fundamental experiments to probe the system behavior are needed.

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