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Discovery of a 3d-transition-metal-based ferromagnetic Kondo lattice system[1] AHMAD US SALEHEEN, TAPAS SAMANTA, DANIEL LEPKOWSKI, ALOK SHANKAR, JOSEPH PRESTIGIACOMO, Louisiana State Univ - Baton Rouge, IGOR DUBENKO, ABDIEL QUETZ, Southern Illinois University, ROY MCDOUGALD JR., GREGORY MCCANDLESS, JULIA CHAN, University of Texas at Dallas, PHILIP ADAMS, DAVID YOUNG, Louisiana State Univ - Baton Rouge, NAUSHAD ALI, Southern Illinois University, SHANE STADLER, Louisiana State Univ - Baton Rouge — The formation of a Kondo lattice results in a wide variety of exotic phenomena associated with the competition between the Kondo effect and the RKKY interaction, such as heavy fermions, non-Fermi liquid behavior, unconventional superconductivity, and so on. A quantum critical point (QCP) has been frequently observed at the boundaries of competing phases for antiferromagnetic materials. However, the existence of a ferromagnetic (FM) QCP is unclear. Moreover, FM Kondo lattices are rare. Here we report the discovery of a FM Kondo lattice system $Mn_{1-x}Fe_xCoGe$, which is the first example of a 3d-metal-based system (i.e., not rare-earth-based). Resistivity, magnetic susceptibility, heat capacity and thermopower studies on a single crystal sample indicate that the anisotropic FM kondo lattice has formed along c-axis. The signature of a spin density wave transition was also observed above the Kondo minimum, below which the resistivity follows a log(T) behavior.

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Ahmad Ikhwan Us Saleheen
Louisiana State Univ - Baton Rouge

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