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Spin-glass insulating ground state in $Y_2Os_2O_7$ ZHIYING ZHAO, Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee 37996, USA, STUART CALDER, Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, USA, MICHAEL MCGUIRE, BRIAN SALES, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, USA, HAIDONG ZHOU, Department of Physics and Astronomy, University of Tennessee, Knoxville, Tennessee 37996, USA, JIAQIANG YAN, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831, USA — $4d/5d$ transition-metal oxides can display many exotic physical properties due to the interplay between spin-orbit coupling (SOC), Coulomb interaction, crystal field effect, Hund's coupling, and lattice distortion. The magnetic ground state of systems with d^4 electronic configuration is under hot debate since the consensus between experiments and theories has not been achieved. A non-magnetic ground state is expected under the J_{eff} scenario in the presence of SOC. However, various ground states are observed in some d^4 systems (such as Ir^{5+}, Os^{4+}, and Ru^{4+}). In this talk, I will present our study on $Y_2Os_2O_7$ with nonmagnetic Y^{3+} at A site which allows us to study the magnetism of Os^{4+} (d^4) sublattice. Polycrystalline $Y_2Os_2O_7$ was synthesized by solid state reaction and was studied by measuring electrical resistivity, magnetic susceptibility, specific heat, and neutron powder diffraction. A spin-glass insulating ground state is observed in contrast to the long-range magnetic ordered state in $Y_2Ru_2O_7$.

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