

Abstract Submitted
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Probing the World of Correlated electron systems: Materials Characterization and Neutron Scattering studies¹ CLARINA DELA CRUZ, Oak Ridge National Laboratory — An important field of experimental Condensed Matter Physics focuses on studying correlated electron systems including unconventional superconductors, iron-based superconductors and multifunctional systems such as multiferroic compounds. The use of various bulk measurement techniques to characterize the physical properties in these systems is an essential first step in revealing the novel electronic and magnetic ground states. Further studies using powerful microscopic probes such as neutron scattering methods are crucial in advancing the central theme in understanding correlated electron systems, which is to make the correlation between structure, magnetism and physical properties. As is common across correlated electron systems, highly degenerate ground states abound which are readily disturbed by chemical dopants and perturbing fields such as an applied magnetic field or pressure. Thus, studying these systems, using neutron scattering techniques in particular, in various extreme conditions reveals new emergent ground states with tunable magnetic, electronic or ferroelectric order parameters.

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