

Abstract Submitted
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Ferromagnetic cluster glass state induced by non-magnetic ions in a paramagnetic host TAKAFUMI D. YAMAMOTO, Department of Physics, Nagoya University, Nagoya 464-8602, RYUJI OKAZAKI, Department of Physics, Faculty of Science and Technology, Noda 278-8510, HIROKI TANIGUCHI, ICHIRO TERASAKI, Department of Physics, Nagoya University, Nagoya 464-8602 — A paramagnetic metal CaRuO_3 has been known to show unique impurity effects, where a magnetic ordering is induced by a partial substitution of transition metal ions for Ru. Since this phenomenon occurs regardless of the magnetism of the substituted ions, it must reflect a magnetic instability of this ruthenate. Understanding such physical properties is one of intriguing issues in condensed matter physics.

In this talk, we report an unconventional magnetic state induced by substituting non-magnetic Sc^{3+} ions. We find that the static magnetic susceptibilities of all Sc-substituted samples show ferromagnetic-like features below 40 K, while the Curie-Weiss temperature dramatically changes with increasing x . This inconsistency is a sign of *non-uniform magnetic system*. We propose a phenomenological model and show that the static magnetic properties can be described as a volume average of a paramagnetic component originated from Ru^{4+} ions and a ferromagnetic one driven by Sc substitution [T. D. Yamamoto *et al.*, JPSJ **84**, 014708 (2015)]. Furthermore our dynamic magnetic measurements reveal a ferromagnetic cluster glass state embedded in the paramagnetic and metallic host of CaRuO_3 .

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