Abstract Submitted
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Metal-insulator transition of (CeO)MnAs by carrier doping YASUHIRO MOROSAWA, KOICHI TAKASE, AKITO NAITO, TADATAKA WATANABE, YOSHIKI TAKANO, College of Science & Technology, Nihon University — (LaO)MnPn ; (Pn = P, As, Sb) are antiferromagnetic semiconductors with high Néel temperature by the strong Mn – Mn magnetic interaction and they seem to be a robust system against carrier doping. (CeO)MnPn are suitable materials to study the electron correlation because the Ce $4f$ electrons in the Ce^{3+} state constitute a Mott insulator which is expected to control by carrier doping due to weaker magnetic interaction than that of the Mn case. In this study, we have investigated the carrier doping effects on the physical properties of (CeO)MnAs. The parent material (CeO)MnAs is also a magnetic semiconductor as same as the analogous case of (NdO)MnAs [1]. In this material, there are two magnetic components, one is the antiferromagnetic ordered Mn $3d$ component, the other is the Ce paramagnetism. The CeO deficiencies provide enough carriers to change the electrical resistivity from insulating to metallic. The deficient samples show Fermi liquid like behaviors at low temperature. These drastic changes are thought to be controlled by Mott transitions.

Yasuhiro Morosawa
College of Science & Technology, Nihon University

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