

Abstract Submitted
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Magnetic and electrical properties of the double chain-type compounds NaRh_2O_4 and NaMn_2O_4 K. YAMAURA, NIMS (Japan), Q. HUANG, NIST, M. MOLDOVAN, D.P. YOUNG, Louisiana SU, E. TAKAYAMA-MUROMACHI, NIMS (Japan) — Both compounds share the same structure basis in which the 6- fold coordinated transition metal, $\text{RhO}_6/\text{MnO}_6$, forms a double chain-type unit by sharing the octahedra edges (CaFe_2O_4 -type structure, not spinel-like). We were interested in the compounds because those magnetic and electrical properties might reflect nature of the correlated $4d/3d$ electrons on the anisotropic basis. The compounds were recently synthesized for the first time. The structure, magnetic and electrical properties were investigated by neutron diffraction, magnetic susceptibility, and electrical transport measurements of those high-quality polycrystalline samples. The data indicate NaRh_2O_4 is metallic down to 1.8 K and the magnetic susceptibility shows a broad cusp around ~ 100 K. NaMn_2O_4 is highly electrically insulating with and without presence of a magnetic field. The manganese oxide goes into an anti-ferromagnetically ordered state at low temperatures through two-steps process at ~ 40 K and ~ 10 K. We will give a detailed report about the properties of the two new compounds.

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