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Magnetic properties of double-layer vanadium oxides and vanadium oxide nanotubes. NATASHA A. CHERNOVA, SAMUEL T. LUTTA, CHRIS JACOBS, M. STANLEY WHITTINGHAM, Institute for Materials Research, SUNY at Binghamton, Binghamton NY 13902-6000, PETER Y. ZAVALIJ, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD 20742-4454 — Double-layer V_8O_{20} compounds[1] intercalated with various cations and the vanadium oxide nanotubes (VONTs) $VO_{2.4}[C_{12}H_{28}N]_{0.31}{\cdot}0.56H_2O$ were prepared using hydrothermal method and characterized by x-ray diffraction, TGA, TEM, FTIR. Magnetic properties were studied using SQUID magnetometer. Depending on the intercalated cation type, the magnetic susceptibility of V_8O_{20} compounds reveal presence of small clusters or infinite linear chains with antiferromagnetic (AF) exchange. VONTs show a spin gap, which is well described by the simple model of magnetic dimers with AF exchange. Various ion exchange and red-ox reactions are performed on VONTs. Structure and magnetic properties of the resulting compounds are discussed. No ferromagnetic response from the VONTs reacted with BuLi is found[2]. The work is supported by the National Science Foundation through grant DMR 0313963.

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