

Synthesis and Structure of Some M^{II}/M^{III} Mixed Fluorides with Pyrochlore and Weberite Related Structures

M. A. Subramanian^a, W. J. Marshall^a, R.-D. Hoffmann^b, and A. W. Sleight^c

^a Central Research and Development Department, Experimental Station, Wilmington, DE 19880-0328, USA

^b Institut für Anorganische und Analytische Chemie, Universität Münster, Corrensstraße 30 – 36, D-48149 Münster, Germany

^c Department of Chemistry, Oregon State University, Corvallis, OR 97331-4003, USA

Reprint requests to Prof. Dr. A. W. Sleight. E-mail: arthur.sleight@oregonstate.edu

Z. Naturforsch. **61b**, 808 – 812 (2006); received February 12, 2006

Dedicated to Professor Wolfgang Jeitschko on the occasion of his 70th birthday

New $NH_4M^{II}M^{III}F_6$ and $M^{II}M^{III}F_5 \cdot 2H_2O$ compounds with the pyrochlore and weberite structures, respectively, are reported. Structures of NH_4CoCrF_6 , $AlZnF_5 \cdot 2H_2O$, and $GaMnF_5 \cdot 2H_2O$ were refined using X-ray diffraction data from single crystals. The structures of $Mg^{II}Al^{III}F_5 \cdot H_2O$ and $NH_4Mg^{II}Al^{III}F_6$ were refined from powder X-ray diffraction data. Magnetic susceptibility data indicates antiferromagnetic ordering in $NH_4Co^{II}V^{III}F_6$ at 7 K but no ordering in $NH_4Co^{II}Cr^{III}F_6$ down to 4.2 K. Electrical conductivity presumably due to protons was observed in $MgAlF_5 \cdot (H_2O)_2$.

Key words: Fluorides, Weberite, Pyrochlore