E0032

Dimensional Reduction and Recombination of the CdX_2 Lattice; New Extended Polyhedral Systems Based on CdX_n Organoammonium Species. B. Twamley[†], A. Thorn[‡], R. D. Willett[‡], [†]Univ. Research Office, Univ. of Idaho, Moscow, Idaho, 83844, [‡]Dept. of Chemistry, Washington State Univ., Pullman, WA, 99164.

The crystal engineering of novel hybrid layered complexes is important in the design of new materials with unusual structures and physical properties. Following our previous research,[1] we have investigated the use of organoammonium species as molecular scissors to modify the CdX_2 hexagonal lattice to obtain new extended 1D, 2D, and 3D systems. Ribbon structures, based on edge-shared CdX_6 and CdX_5L (L = H_2O or MeOH) octahedra, are obtained with stoichiometries $[Cd_2Cl_5(H_2O)]_n^{n-}$, $[Cd_3Cl_8(MeOH)]_n^{2n-}$, $[Cd_3Br_8(CdBr_2)]_n^{2n-}$, and $[Cd_5Cl_{12}(H_2O)_2]_n^{2n-}$. In addition, a microporous version of the CdX_2 lattice, with stoichiometry $[Cd_9Cl_{20}]_n^{2n-}$, is found using the $(n\text{-Bu})_2NH_2^+$ cation, while the use of the $(Me)_2NH_2^+$ cation yields a novel 3D structure with stoichiometry $[Cd_5Br_{12}]_n^{2n-}$, containing interlocked linear chains of $CdBr_6$ octahedra linked by isolated $CdBr_4$ tetrahedra.

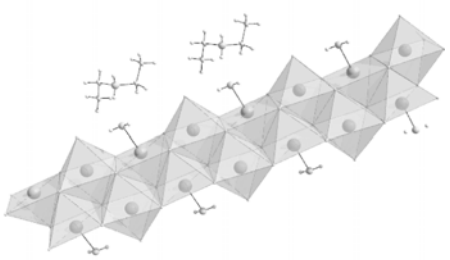

Figure 1. Ribbon structure of $[(DEA)Cd_2Cl_5{\cdot}H_2O]_n$.

[1]A. Thorn, R. D. Willett and B. Twamley, *Cryst. Growth & Des.* (ASAP article)