Crystal Structure of Two Related Selenites

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 $M_3(SeO_3)_3$ ·H₂O for M= Mn,Co have been synthesized using mild hydrothermal conditions under autogeneous pressure. The crystal structure of both compounds have been solved from X-ray single crystal data in P-1 triclinic space group with Z= 2. The crystal structures of the $M_3(SeO_3)_3$ ·H₂O (M= Mn,Co) consist of a threedimensional framework formed by MO₆ octahedra and (SeO₃)²⁻ selenite anions with trigonal pyramidal geometry. Both structures show the existence of zig-zag chains linked through M_2O_{10} dimeric units and MO₆ octahedra and are inter-changeable by the rotation of these dimers and octahedra and a corresponding change of edge/corner sharing connectivity.

Taking into account the results of the luminescence and diffuse reflectance spectroscopies, the Dq and Racah (B and C) parameters have been calculated by fitting the experimental frequencies to an energy level diagram for octahedral d^5 and d^7 high spin Mn(II) and Co(II) ion systems.

Magnetic measurements show the existence of antiferromagnetic interactions in these compounds.

A. Larrañaga thanks to the Gobierno Vasco/Eusko Jaularitza for a doctoral fellowship.

Keywords: synthesis, selenites, crystal structure and properties