Poster Presentation

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Alexdrandrite Effects and Pseudosymmetry in Aluminum Oxalates

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Three chromium doped potassium aluminum oxalates, (K3[Al0.95Cr0.05(C2O4)3]·3H2O) "Blue", (K2/3Na7/3[Al0.95Cr0.05(C2O4)3]·4H2O) "RedCubic", and (K18{Na[Al0.964Cr0.036(C2O4)3]6}Cl·18H2O) "Red-Hexagonal" were prepared from aqueous solutions of K3[Cr(C2O4)3]·3H2O, K3[Al(C2O4)3]·3H2O and NaCl, and their solid state and solution properties were rationalized from their crystal structures, analysis data and solid state and solution UV-vis spectra. Crystals of "RedCubic" are characterized by a metrically cubic I-centered unit cell, but do have actual tetragonal symmetry derived by ordering of sodium and potassium ions not compatible with the apparent cubic symmetry. Results of 13C-NMR, EPMA/EDX, SC-XRD, and UV-Vis spectroscopies are discussed in relation to the compound's structures and color behavior. In aqueous solution RedCubic and Blue show the same greenish purple color and identical electronic absorption peaks. In the solid state, they have different colors and show slightly different absorption peaks. Their color behavior as well as the Alexandrite color-change effect observed in the two Red crystals are rationalized based on the compounds' absorption peaks.

[1] *D. Armentano, G. D. Munno, J. Faus, et al., Inorg. Chem. 2001, 40, 655-660.,* ***[2]*** *G. Delgado, A. Mora, V. Sagredo, Physica B, 2002, 320, 410-412.*

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