ologous anion substitution series, $Ln(OH)_{3-x}$. The previously unreported $Ln(OH)_{2.55}Cl_{0.45}$ phases are clearly substoichiometric in chloride and are described by the $Ln_7(OH)_{18}Cl_3$ composition. X-ray diffraction data for the phases at $x = 0.45$ show a pronounced UCl_3-type substructure and complex superstructure reflections which have been indexed on a hexagonal cell. For the lanthanum phase, $a = 17.662(6)$ and $c = 3.914(1)$ Å. Efforts to obtain single crystals have been unsuccessful. Thermal decomposition processes of the hydroxide chlorides have been investigated, and the characterization of $LaO(OH)_{0.55}Cl_{0.45}$, a monoclinic YOOH-type intermediate phase, is reported. Structural features and phase equilibria of the hydroxide chlorides are discussed and analogies with the hydroxide nitrate systems are drawn.

Positron Annihilation with Valence Electrons in Th_3As_4 and U_3As_4. B. ROZENFELD, E. DEBOWSKA, Institute of Experimental Physics, University of Wroclaw AND Z. HENKIE, Institute for Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, Poland. The angular distribution of annihilation photons (ADAP) for polycrystalline samples of the nonmagnetic semiconductor Th_3As_4 and the magnetically-ordered-at-lower-temperatures, semimetallic U_3As_4 are compared. The "tail" component (high angle part) in the ADAP curve for U_3As_4, markedly higher than for Th_3As_4, is supposed to be the result of annihilation with $5f$ electrons being localized at the uranium ionic core. The number of valence electrons per molecule calculated in the free-electron model approximation from the small angle part of the ADAP curve is equal to 31.7 ∓ 1.4 for Th_3As_4 and 32.7 ∓ 1.4 for U_3As_4.