Synthese und Charakterisierung der Lanthanoidbleioxidnitrate $LnPbO_2NO_3$ mit Ln = La, Pr, Nd und Sm

Synthesis and Characterisation of Lanthanide Lead Oxide Nitrates $LnPbO_2NO_3$ with Ln = La, Pr, Nd, and Sm

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The lanthanide lead oxide nitrates $LnPbO_2NO_3$ with Ln = La, Pr, Nd, and Sm were synthesised by solid state reactions of the nitrates in air and subsequent reactions in sealed silica tubes under *in situ* generated NO_x atmosphere. The crystal structure of LaPbO_2NO₃ was refined isotypically with BiPbO_2NO₃ in the tetragonal space group I4/mmm by means of Rietveld powder XRD. According to this refinement, an orientational disorder is present for the NO₃⁻ ions. The homologous $LnPbO_2NO_3$ compounds were indexed isotypically for Ln = Pr, Nd, and Sm, and their lattice parameters were refined. The structures contain $[LnPbO_2]^+$ layers, alternating with single $[NO_3]^-$ layers. Thermal analyses (DTA/TG) were performed for $LnPbO_2NO_3$ compounds and magnetic measurements for NdPbO₂NO₃. The employment of LaPbO₂NO₃ as a precursor for oxide materials, or as an NO_x storage material is considered.

Key words: Lanthanide Lead Oxide Nitrate, Structure, Thermal Decomposition, NO_x Storage