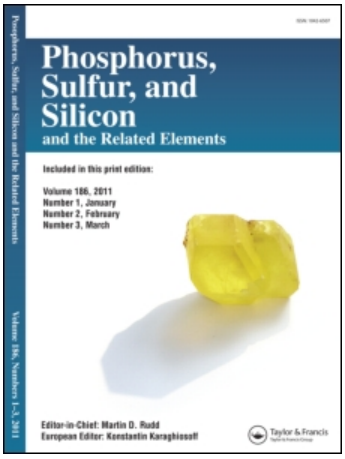

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Thermosynthesis of Anhydrous Phosphates

Z. Konstant[a]
[a] Institute of Inorganic Chemistry of the Latvian Academy of Sciences, Salaspils-1, USSR

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THERMOSYNTHESIS OF ANHYDROUS PHOSPHATES

Z.KONSTANT
Institute of Inorganic Chemistry of the Latvian Academy of Sciences, Miera Str. 34, Salaspils-1 229021, USSR

Thermosynthesis is a direct and, in the majority of cases, a shorter way of obtaining anhydrous phosphates. In the present paper oxides (carbonates) of multivalent metals and ammonium dihydrogen phosphate were used as initial components. However, the complicated and incessantly changing composition of decomposition products of ammonium dihydrogen phosphate in a wide temperature range virtually excludes the possibility to investigate the systems under equilibrium conditions (in some cases one can investigate only metastable state systems, in which the "equilibrium" is reached "from below"). With the aim, regardless of the above-mentioned, to retain the opportunity to summarize all basic chemical processes (leading reactions) of solid-phase interaction of the initial components we have made use of complex schemes of solid-phase reactions under dynamic (nonequilibrium) conditions with different phosphorus-metal ratios and temperature rate. It does not exclude application of state diagrams (in more narrow composition ranges or at higher temperatures) when possible. Such complex approach enhances the probability of forecasting compounds and development of optimum synthesis course. Solid-phase reactions of obtaining condesated phosphates by the method of heating oxides (carbonates) of metals with ammonium dihydrogen phosphate were studied for such multivalent metals as magnium, calcium, zinc, copper, cadmium, manganese, cobalt, nickel, scandium, titanium, vanadium, chromium, cerium.