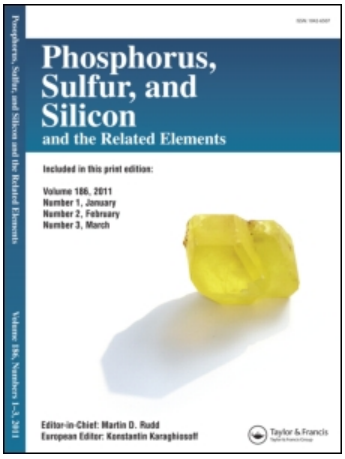


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# Double Tetrametaphosphates $Ca_{2-x}M_x^{II}P_4O_{12}$

Trojan Miroslav[a]
[a] Institute of Chemical Technology, Pardubice, Czechoslovakia

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# Double Tetrametaphosphates $Ca_{2-x}M_x^{II}P_4O_{12}$

Trojan Miroslav
Institute of Chemical Technology
Pardubice, 532 10 Czechoslovakia



The thermal synthesis of $Ca_{2-x}M_x^{II}P_4O_{12}$ ($M^{II}$ = Mn, Co; x = 0,5 - -1,5) starts from a mixture of carbonates of the respective metals and phosphoric acid. Formation of the products has been followed by TA (thermal analyses) under quasi-isothermal-isobaric conditions and compared with that of simple tetrametaphosphates at the same conditions (Refs 1,2). Distinct effect of water vapour pressure on the condensation reaction course is indicated; enhanced pressure retards the reactions and shifts them to higher temperatures, but it favours formation of the desired condensation intermediates and, especially, increases the yield of the double tetrametaphosphate. Monoclinic structure of the microcrystalline products obtained has been confirmed. The lattice parameters have been determined, and their shift to lower values with increasing x has been observed. The TA methods have been used to follow thermal stability of the products and to determine the temperatures of melting and of reversible transition to higher linear phosphates (polyphosphates). For these vitreous products we have determined their softening temperatures, and temperature, heat, and energy of the recrystallization connected with reverse formation of the double tetrametaphosphates. The reversible transition is also used for synthesis of the pure products (Ref.3) which appear to be promissing as special inorganic pigments (Ref.4).

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