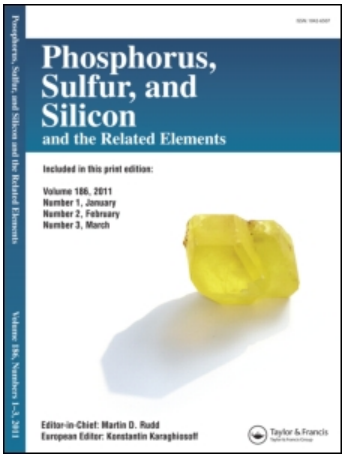

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Synthesis of the Cu_{2-x} Mg_x P_4 O_{12} and Ni_{2-x} Mg_x P_4 O_{12}

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SYNTHESIS OF THE $Cu_{2-x}Mg_xP_4O_{12}$ AND $Ni_{2-x}Mg_xP_4O_{12}$

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Some binary cyclo-tetraphosphates have been synthetized by means of thermal dehydration of the starting binary dihydrogenphosphate. The mechanism of dehydration and condensation reactions in dependence on various special conditions of thermal preparation (temp. rate, water vapour pressure, using nuclei) has been studied. The methods of TA at quasi-isothermal and quasi-isobaric conditions with combination of calcination experiments have been used for these purposes. The reaction products obtained were analyzed by chromatography, IR-spectroscopy, X-ray diffraction analysis, electron microscopy and AAS. The course, the rate and the yields of the condensation reactions of formation of the main products considered $Cu_{2-x}Mg_xP_4O_{12}$ and $Ni_{2-x}Mg_xP_4O_{12}$, have been investigated. These coloured products (green or yellow-green) crystallize in the monoclinic system, C2c group (where $x \in (0; 2)$). Their structural parameters have the values for $Cu_{2-x}Mg_xP_4O_{12}$ or $Ni_{2-x}Mg_xP_4O_{12}$ ($x = 2$ to $x = 0$) : $a = 11.749(5)$ to $12.546(7)$ or $11.644(5)$ Å, $b = 8.278(4)$ to $8.092(5)$ or $8.238(4)$ Å, $c = 9.905(4)$ to $9.565(5)$ or 9.813 Å and $\beta = 118.92(2)^\circ$ to $118.63(3)^\circ$ or $118.53(2)^\circ$, respectively.