Crystal engineering and structural diversity of 2-aminopyridinium hypodiphosphates obtained by crystallization and dehydration

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Streszczenie

Organic–inorganic salts and ionic co-crystals of hypodiphosphoric acid ($H_4P_2O_6$) with 2-aminopyridine (2ap) have been synthesized and characterized by X-ray crystallography, thermogravimetry, elemental analysis and Fourier-transform infrared spectroscopy. $(2apH)_4(H_3P_2O_6)_2(H_2P_2O_6)\cdot 2H_2O$ (**1**), $(2apH)_2(H_2P_2O_6)\cdot 2H_2O$ (**4**), $(2apH)_2(H_2P_2O_6)\cdot(H_4P_2O_6)$ (**6**) and $(2apH)_2(H_2P_2O_6)\cdot 2(2ap)$ (**7**) were obtained in crystalline form in a typical solution-crystallization process. Compounds $(2apH)_4(H_3P_2O_6)_2(H_2P_2O_6)\cdot 0.4H_2O$ (**2**), $(2apH)_4(H_3P_2O_6)_2(H_2P_2O_6)\cdot 0.1H_2O$ (**3**) and $(2apH)_2(H_2P_2O_6)$ (**5**) were formed during dehydration processes of (**1**) and (**4**), respectively, which took place as destructive transformations. Further annealing of compound (**5**) results in its partial decomposition into the anhydrous form of compound (**3**). Water removal is associated with a rearrangement of the crystal architecture and with the partial deformation of hypodiphosphate anions from the typical staggered conformation towards an eclipsed one.

Adres publiczny

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