

# Oligomere Tetraeder-Anionen in Borophosphaten: Darstellung und Kristallstrukturen von $\text{NaFe}[\text{BP}_2\text{O}_7(\text{OH})_3]$ und $\text{K}_2\text{Fe}_2[\text{B}_2\text{P}_4\text{O}_{16}(\text{OH})_2]$

Oligomeric Tetrahedral Anions in Borophosphates: Synthesis and Crystal Structures of  $\text{NaFe}[\text{BP}_2\text{O}_7(\text{OH})_3]$  and  $\text{K}_2\text{Fe}_2[\text{B}_2\text{P}_4\text{O}_{16}(\text{OH})_2]$

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Crystals of the title compounds were grown under hydrothermal conditions. The crystal structures were determined by single crystal data.

$\text{NaFe}[\text{BP}_2\text{O}_7(\text{OH})_3]$  (monoclinic,  $C 2/c$ ,  $a = 1042.0(2)$ ,  $b = 821.5(1)$ ,  $c = 921.7(1)$  pm,  $\beta = 116.60(1)^\circ$ ,  $Z=4$ ): The crystal structure contains isolated anions  $[\text{BP}_2\text{O}_7(\text{OH})_3]^{4-}$ , which correspond to trinuclear units  $\text{PO}_{1/2}\text{O}_3\text{-BO}_{2/2}(\text{OH})_2\text{-PO}_{1/2}\text{O}_2(\text{OH})$  of corner sharing tetrahedra.  $\text{Fe}^{3+}$  is coordinated octahedrally by oxygen,  $\text{Na}^+$  is 8-fold coordinated by oxygen forming cubes.

$\text{K}_2\text{Fe}_2[\text{B}_2\text{P}_4\text{O}_{16}(\text{OH})_2]$  (triclinic,  $P\bar{1}$ ,  $a = 516.7(1)$ ,  $b = 808.9(1)$ ,  $c = 834.0(1)$  pm,  $\alpha = 87.06(1)$ ,  $\beta = 80.21(1)$ ,  $\gamma = 86.59(1)^\circ$ ,  $Z = 1$ ): The crystal structure contains isolated anions  $[\text{B}_2\text{P}_4\text{O}_{16}(\text{OH})_2]^{8-}$ . Four-membered rings of tetrahedra with two additional terminal phosphate groups are formed by condensation of two trinuclear units  $\text{PO}_{1/2}\text{O}_3\text{-BO}_{3/2}(\text{OH})\text{-PO}_{2/2}\text{O}_2$ .  $\text{Fe}^{3+}$  is in an octahedral and  $\text{K}^+$  in an irregularly 10-fold coordination by oxygen.

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