MS14-P35 | THE CRYSTAL STRUCTURES OF NATURAL BARYUM BERYLLOPHOSPHATES

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Three new Ba-bearing beryllophosphates were recently described. Minjiangite, $BaBe_2P_2O_8$, occurs in the Nanping No. 31 pegmatite, China (space group *P*6/*mmm, a* = 5.028(1), *b* = 7.466(1) Å). It shows a phyllophosphate structure consisting of double layers of tetrahedra, which contain both Be and P in a 1:1 ratio. Inside the layers, $(Be,P)O_4$ tetrahedra form six-membered rings by sharing corners. The Ba atoms are located in regular 12-coordinated polyhedra and connect two successive double layers. Wilancookite, $(Ba,K,Na)_8(Ba,Li,[])_6Be_{24}P_{24}O_{96}.32H_2O$, occurs in the Lavra Ponte do Piauí pegmatite, Minas Gerais, Brazil. Its crystal structure (*I*23, *a* = 13.5398(2) Å) is identical to those of pahasapaite and of synthetic zeolite RHO; the framework is based on corner-sharing BeO_4 and PO_4 tetrahedra forming a large cavity in which occur Ba atoms and water molecules. Three different types of rings are building the cavity: eight-, six-, and four-membered rings. A third new species was discovered in the Vilatte-Haute pegmatite, Limousin, France, with the ideal formula $BaCa[Be_4P_4O_{16}]\cdot 6H_2O$. This beryllophosphate (space group $P2_1/c$, *a* = 9.4958(4), *b* = 13.6758(4), *c* = 13.4696(4) Å, β = 90.398(3)º) shows a zeolite framework identical to that of phillipsite, based on corner-sharing BeO_4 and PO_4 tetrahedra forming inter-connected 4-membered and 8-membered rings. Large cages within this zeolite framework contain Ba, Ca and water molecules.