A niobium phosphate “bronze” closely related to the Ba3Nb6Si4O26 structure: Na6Nb8P5O35

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Description
A new niobium “bronze” $Na_6Nb_8P_5O_{35}$ has been isolated, the structure of which has been determined from a single crystal by X-ray diffraction. This oxide crystallizes in the space group *R*32, *a* = 8.9185 (5) Å and *c* = 30.055 (11) Å. The mixed framework built up from corner sharing NbO_6 octahedra and single PO_4 tetrahedra can be described by the stacking along **c** of tetrahedral $[P_3O_6]_\infty$ layers and $[Nb_8P_2O_{29}]_\infty$ layers. The latters are closely related to the $Ba_3Nb_6Si_4O_{26}$ structure since they present identical $[Nb_6O_{27}]$ units with identical orientations leading to a similar “*a*” parameter; those units are linked through single PO_4 tetrahedra and NbO_6 octahedra instead of Si_2O_7 groups in the siliconiobate. The similarity with the structure of $K_3Nb_8O_{21}$ is also discussed. Attention is drawn to the existence of wide circular galleries where Na^+ ions can move freely, suggesting possible ionic conductivity. The name of …