A structural model with a defect normal fluo-
rite ion position (1/4 1/4 1/4) and a simulta-
naneous statistic occupation of two interstitial
sites on symmetry axes 2, P' (1/2 u u), and 3, 
P" (v v v), correspondingly, is thought to be
typical of non-stoichiometric phases.

We investigated the relationships of these
fluorides at a distance a little shorter
than the ionic radii of R3+ and M2+ cations. In the
first structural type F' ions contact two near-
static interstitial sites on axes 2 only, whereas in the second type P" (v v v)
ions, v = 0.41-0.42 localize only on axes 3. A structural model with two statistically occu-
pied interstitial sites can be a result of erro-
reneous interpretation of the electron (nucle­
ar) density distribution and a strong correla-
tion of the refined parameters in the least-
squares techniques.

The first structural type with interstitial P'
(1/2 u u) ion positions is found for: Ba0.73
Pr0.27 P2.27 (2 = 293 and 573 K); Sr0.84 La0.16
Y2.16 Ce0.90 Ce0.10 0.21. To the second struc-
tural type with additional P" (v v v) ion po-
positions the following can be safely referred: 
Ca0.607 Ce0.393 F2.393; Sr0.49 La0.51 0.23.

The type of the structure depended on relations of the ionic radii of R3+ and M2+ aotions. In the
first structural type P' ions contact two near-
static sites at a distance a little shorter
than the P-F one of the corresponding fluorite
structure. These structures were recognized at the ratio of ionic radii being r(R3+)/r(M2+) > 1.75.

Possible cluster models in these two types of
structures were discussed. In the 1st type the
formation of a cluster occurs as a result of the
extraction of 8 atoms from the normal F(1/4 1/4 1/4) ion
position, the position on axes 2 being oc-
cupied by up to 12 additional P'(1/2 u u) ions.
The vacancy inside this cluster can be occupied
by up to 2 additional P' ions close to the (1/2
1/2 1/2) position, the number of extra P'(1/2
u u) aions relating to the number of vacancies
in the normal position of P'(1/4 1/4 1/4) ions
as 1:7.5. In the 2nd type of structures the im-
plantation of 4 P" (v v v) ions can be a result of the extraction of a single P'(1/4 1/4 1/4) ion. The maximum ratio of the number of P" ions to the number of vacancies of P' ions went up to 4.0. The most likely structures for the 1st type of
structures are N\(X_{8}\)s (8:12:0 - 8 vacancies of
P' ions; 12 extra P' ions and the absence of P" ions), N\(X_{8}\)s (8:12:1) and N\(X_{8}\)s (8:12:2). The 2 latter clusters possess 1 of 2 additional P" ions which are discarded inside the cluster
close to the empty cube (1/2 1/2 1/2) of the normal fluorite matrix. The most likely cluster for the structures of the 2nd
type is N\(Y_{8}\)s (1:0:4) which is smaller in size.

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