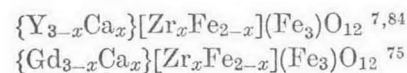


See also 4, 23, 24.

17. Zr⁴⁺: *a* and *c* sites

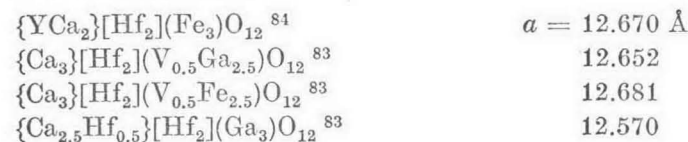


(In this case, our powder photograph had some faint extra lines, indicating that the formula of the garnet is not precisely as written.)



See also 4, 23, 24, 33a, 35.

18. Hf⁴⁺: *a* and *c* sites



See also 23 and 24.

Group IVA

19. Si⁴⁺: *d* sites only

Many examples are given in Table 3 and elsewhere in this survey. Comments under Si⁴⁺ in the earlier survey⁸ have been corrected.

20. Ge⁴⁺: prefers *d* sites but will enter *a* sites

Many examples are given in Table 4 and elsewhere in this survey. Comments under Ge⁴⁺ in the earlier survey⁸ have been corrected. See also Refs. 7 and 97.

⁸³ B. V. MILL', G. M. ZADNEPROVSKII and V. V. BAKAKIN, New compounds with garnet-type structure. *Izv. Akad. Nauk SSSR, Neorg. Mater.* 2 (1966) 1861–1864.

⁸⁴ S. GELLER, R. M. BOZORTH, C. E. MILLER and D. D. DAVIS, Crystal chemical and magnetic studies of garnet systems $\{YCa_2\}[M_2^{4+}](Fe_3)O_{12}$ — $\{Y_3\}[Fe_2](Fe_3)O_{12}$; M = Zr or Hf. *J. Physics Chem. Solids* 13 (1960) 28–32.

21. Sn⁴⁺: prefers *a* sites but enters *d* sites

In the earlier survey⁸, we gave as an example the distribution of Sn⁴⁺ ion in Ca₃Fe₂Sn₃O₁₂. In our first paper on the tin-substituted yttrium iron garnets, we indicated that we did not obtain a single-phase garnet with this composition. In later work⁸⁵, we were still unable to do so and we believe tentatively that defect structures are indicated. In addition to our studies^{77,85} of the system, $\{Y_{3-x}Ca_x\}Fe_{5-x}Sn_xO_{12}$, some studies⁸⁶ have been made on the analogous Gd system; lattice constants are not reported, however. Other Sn-containing garnets reported are:



(In this case, our powder photographs contained some faint unidentifiable extra lines, indicating that the formula of this garnet is not precisely as written.)

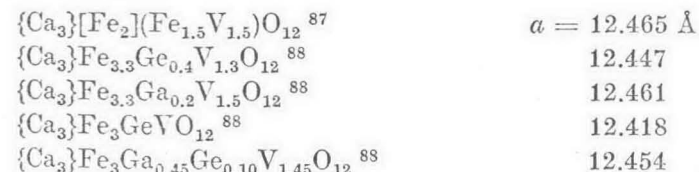
See also 6, 23, 24.

Group VB

22a. V³⁺: *a* sites only (probably)

See Tables 3 and 4.

b. V⁵⁺: *d* sites



⁸⁵ S. GELLER, H. J. WILLIAMS, R. C. SHERWOOD and G. P. ESPINOSA, On the tin-substituted yttrium iron garnets. *J. Physics Chem. Solids* 26 (1965) 443–445.

⁸⁶ K. P. BELOV and I. C. LYUBUTIN, Magnetic properties of the substituted garnet ferrites of gadolinium and yttrium. *Kristallografiya* 10 (1965) 351–356; *Soviet Physics—Crystallography* 10 (1966) 282–286.

⁸⁷ S. GELLER, G. P. ESPINOSA, H. J. WILLIAMS, R. C. SHERWOOD and E. A. NESBITT, Rare-earth and yttrium-free ferrimagnetic garnet with 493°K Curie temperature. *Appl. Physics Letters* 3 (1963) 60–61.

⁸⁸ S. GELLER, G. P. ESPINOSA, R. C. SHERWOOD and H. J. WILLIAMS, Additional yttrium-free ferrimagnetic garnets. *J. Appl. Physics* 36 (1965) 321–322.