

$\{Y_{3-2x}Ca_{2x}\}[Fe_2](Fe_{3-x}V_x)O_{12}$ ⁸⁹
 $\{Bi_{3-2x}Ca_{2x}\}[Fe_2](Fe_{3-x}V_x)O_{12}$ ^{89,90}
 See also 1, 3, 4, 8, 21, 27.

23. Nb⁵⁺: *a* sites only (probably)

$\{Mn_3\}[NbZn](FeGe_2)O_{12}$	$a = 12.49 \text{ \AA}$
$\{Ca_3\}[NbZr](Ga_3)O_{12}$	12.595
$\{Ca_3\}[NbHf](Ga_3)O_{12}$	12.589
$\{Ca_3\}NbTiGa_3O_{12}$	12.452
$\{Ca_3\}SnNbGa_3O_{12}$	12.550

24. Ta⁵⁺: *a* sites only (probably)

As indicated in my earlier survey⁸, it is to be expected that Ta⁵⁺ with a size only slightly smaller than that of Nb⁵⁺ would replace Nb⁵⁺ in like compounds. This has been shown to be the case by MILL⁸³:

$\{Ca_3\}[TaZr](Ga_3)O_{12}$	$a = 12.591 \text{ \AA}$
$\{Ca_3\}[TaHf](Ga_3)O_{12}$	12.584
$\{Ca_3\}TaTiGa_3O_{12}$	12.455
$\{Ca_3\}TaSnGa_3O_{12}$	12.554

Group VA

25. P⁵⁺: *d* sites only

$\{NaCa_2\}[Mg_2](P_3)O_{12}$	a , not reported
See 2.	

26. As⁵⁺: *d* sites only

See 2.

27. Sb⁵⁺: *a* sites only

$\{Ca_3\}[Sb_{1.5}Fe_{0.5}](Fe_3)O_{12}$	$a = 12.580 \text{ \AA}$
$\{Ca_3\}[Sb_{1.5}Ga_{0.5}](Ga_3)O_{12}$	12.472
$\{NaCa_2\}[Sb_2](Fe_3)O_{12}$	12.600
$\{NaCa_2\}[Sb_2](Ga_3)O_{12}$	12.480

⁸⁹ S. GELLER, G. P. ESPINOSA, H. J. WILLIAMS, R. C. SHERWOOD and E. A. NESBITT, Ferrimagnetic garnets containing pentavalent vanadium. *J. Appl. Physics* **35** (1964) 570–572.

⁹⁰ G. P. ESPINOSA and S. GELLER, Growth of single-crystal garnets of the system $\{Bi_{3-2x}Ca_{2x}\}[Fe_2](Fe_{3-x}V_x)O_{12}$. *J. Appl. Physics* **35** (1964) 2551–2554.

⁹¹ S. GELLER, H. J. WILLIAMS, G. P. ESPINOSA and R. C. SHERWOOD. Far magnetic garnets containing pentavalent antimony. *J. Appl. Physics* **35** (1964) 542–547.

$\{Y_{3-2x}Ca_{2x}\}[Fe_{2-x}Sb_x](Fe_3)O_{12}$ ^{91,92}
 $\{Ca_3\}[Sb_xFe_{2-x}](Fe_{1.5+x}V_{1.5-x})O_{12}$ ⁹¹
 $\{Me_{3-4x}Ca_{4x}\}[Sb_xFe_{2-x}](Fe_{3-x}V_x)O_{12}$, Me ≡ Y or Bi⁹¹

28. Bi³⁺: *c* sites only

$\{Y_{3-x}Bi_x\}[Fe_2](Fe_3)O_{12}$	⁹³
See 13, 22b, 27.	

Group VIIB

29. Cr³⁺: *a* sites only

See Tables 3 and 4 for examples of end-members.

$\{Y_3\}[Fe_{2-x}Cr_x](Fe_3)O_{12}$	^{59,66,82}
$\{Y_3\}[Ga_{2-x}Cr_x](Ga_3)O_{12}$	⁶⁶
$\{Y_{3-x}Ca_x\}[Fe_{2-y}Cr_y](Fe_{3-x}Ge_x)O_{12}$	⁵⁵

Group VIIIB

30a. Mn²⁺: *c* and *a* sites

$\{CaGd_2\}[Mn_2](Ge_3)O_{12}$	$a = 12.55 \text{ \AA}$
$\{MnGd_2\}[Mn_2](Ge_3)O_{12}$	12.482
$\{CaY_2\}[Mn_2](Ge_3)O_{12}$	12.475
$\{MnY_2\}[Mn_2](Ge_3)O_{12}$	12.392
$\{Gd_3\}[Mn_2](GaGe_2)O_{12}$	12.550
$\{Y_3\}[Fe_{1.6}Mn_{0.4}](Fe_{2.6}Si_{0.4})O_{12}$	12.359
$\{Y_{2.9}Mn_{0.1}\}[Fe_2](Fe_{2.9}Si_{0.1})O_{12}$	12.368

See Tables 3 and 4 and also 2, 4, 8, 9, 33a, 35.

b. Mn³⁺: *a* sites

$\{Y_3\}[Mn_{0.1}Fe_{1.9}](Fe_3)O_{12}$	$a = 12.375 \text{ \AA}$
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See Table 4 for end-members.

Group VIII

31a. Fe²⁺: *c* and *a* sites

$\{Fe_3\}[Al_2](Si_3)O_{12}$	$a = 11.526 \text{ \AA}$
$\{Y_{2.9}Fe_{0.1}\}[Fe^{2+}_{0.3}Fe^{3+}_{1.7}](Fe^{3+}_{2.6}Si_{0.4})O_{12}$	12.340
$\{Y_3\}[Fe^{3+}_{2-x}Fe^{2+}_x](Fe^{3+}_{3-x}Si_x)O_{12}$	⁵⁵

⁹² G. BLASSE, Magnetic-garnet phases containing pentavalent antimony. *Philips Res. Reports* **19** (1964) 68–72.

⁹³ S. GELLER, H. J. WILLIAMS, G. P. ESPINOSA, R. C. SHERWOOD and M. A. MILLEO, The reduction of the preparation temperature of garnets by bismuth substitution. *Appl. Physics Letters* **3** (1963) 21–22.