

Appendix 6. Equilibrium chemical compositions of phases under selected P - T conditions from Fig. 8d: (a) near boundaries and (b) far from boundaries. These were obtained using the TC book (x_j^{k*} ; upper line) and THERMOCALC 3.33 (x_j^k ; lower line). Δ : differences between the upper and lower lines; $x_{Fe}^g (x_{Fe}^g) = Fe/(Fe + Mg + Mn)$; $x_{Fe}^{k*} (x_{Fe}^k) = Fe/(Fe + Mg)$ for phase k (except garnet); $x_{Mn}^{st*} (x_{Mn}^{st})$ or $x_{Mn}^g (x_{Mn}^g) = Mn/(Fe + Mg + Mn)$; $x_{Mn}^{bi*} (x_{Mn}^{bi}) = x_{Mn}^{M1} = x_{Mn}^{M2}$; $x_{Mn}^{chl*} (x_{Mn}^{chl}) = x_{Mn}^{M1} = x_{Mn}^{M23}$; $x_{Al}^{bi*} (x_{Al}^{bi}) = x_{Al}^{M1}$; $x_{Al}^{chl*} (x_{Al}^{chl}) = (x_{Al}^{M4} + x_{Al}^{M1})/2$; $x_{Al}^{mu*} (x_{Al}^{mu}) = x_{Al}^{M2A}$; $Q_k^*(Q_k)$: order parameter for phase k . See the $a-x$ file “tc-MnKFMASH&.txt” ([URL1]) for details regarding the variables, and the caption of Fig. 8 for the setting of the calculations.

ID number	Mineral assemblage (+mu +q +fl)	P (kbar)	T (°C)	staurolite		garnet		biotite				chlorite			muscovite		
				x_{Fe}^{st*} x_{Fe}^{st}	x_{Mn}^{st*} x_{Mn}^{st}	x_{Fe}^g x_{Fe}^g	x_{Mn}^g x_{Mn}^g	x_{Fe}^{bi*} x_{Fe}^{bi}	x_{Al}^{bi*} x_{Al}^{bi}	x_{Mn}^{bi*} x_{Mn}^{bi}	Q_{bi}^* Q_{bi}	x_{Fe}^{chl*} x_{Fe}^{chl}	x_{Al}^{chl*} x_{Al}^{chl}	x_{Mn}^{chl*} x_{Mn}^{chl}	x_{Fe}^{mu*} x_{Fe}^{mu}	x_{Al}^{mu*} x_{Al}^{mu}	
<i>(a) Near boundaries</i>																	
199	g-bi-ky	10.5	680			0.7512	0.0133	0.4549	0.3278	0.0003	0.3027					0.4003	0.8542
			Δ			0.7518	0.0134	0.4558	0.3283	0.0003	0.3027					0.4012	0.8545
						-0.0006	-0.0001	-0.0009	-0.0005	0.0000	0.0000					-0.0009	-0.0003
203	g-bi-sill	6	680			0.6555	0.2041	0.6004	0.5379	0.0049	0.1532					0.4991	0.9196
			Δ			0.6425	0.2185	0.6005	0.5382	0.0049	0.1533					0.4997	0.9199
						0.0130	-0.0144	-0.0001	-0.0003	0.0000	-0.0001					-0.0006	-0.0003
227	g-bi-chl	14	540			0.8047	0.1228	0.6250	0.0627	0.0032	0.4107	0.5925	0.5155	0.0021		0.5632	0.6828
			Δ			0.8042	0.1233	0.6252	0.0579	0.0023	0.4116	0.5926	0.5156	0.0021		0.5632	0.6833
						0.0005	-0.0005	-0.0002	0.0048	0.0009	-0.0009	-0.0001	-0.0001	0.0000		0.0000	-0.0005
451	st-g-bi	5	570	0.8670	0.0215	0.6266	0.2623	0.5765	0.4860	0.0043	0.2032					0.4441	0.9367
			Δ	0.8670	0.0214	0.6149	0.2724	0.5765	0.4860	0.0042	0.2035					0.4430	0.9369
				0.0000	0.0001	0.0117	-0.0101	0.0000	0.0000	0.0001	-0.0003					0.0011	-0.0002
451	st-g-bi	11	620	0.8009	0.0009	0.7713	0.0139	0.4401	0.2368	0.0002	0.3811					0.3771	0.8423
			Δ	0.8014	0.0009	0.7720	0.0140	0.4410	0.2371	0.0002	0.3812					0.3781	0.8426
				-0.0005	0.0000	-0.0007	-0.0001	-0.0009	-0.0003	0.0000	-0.0001					-0.0010	-0.0003
483	st-g-bi-chl	7	570	0.8943	0.0075	0.7716	0.1265	0.6376	0.4014	0.0018	0.2175	0.5217	0.5968	0.0023		0.5158	0.9097
			Δ	0.8945	0.0081	0.7728	0.1251	0.6373	0.4012	0.0019	0.2180	0.5218	0.5972	0.0026		0.5158	0.9098
				-0.0002	-0.0006	-0.0012	0.0014	0.0003	0.0002	-0.0001	-0.0005	-0.0001	-0.0004	-0.0003		0.0000	-0.0001
<i>(b) Far from boundaries</i>																	
35	chl	13	480									0.6096	0.5098	0.0079		0.5535	0.6793
			Δ									0.6096	0.5098	0.0079		0.5536	0.6793
												0.0000	0.0000	0.0000		-0.0001	0.0000
75	bi-sill	4	670					0.6009	0.5831	0.0054	0.1353					0.4867	0.9372
			Δ					0.6009	0.5834	0.0054	0.1354					0.4868	0.9373
								0.0000	-0.0003	0.0000	-0.0001					-0.0001	-0.0001
83	bi-and	2	600					0.6008	0.6024	0.0053	0.1358					0.4525	0.9557
			Δ					0.6008	0.6025	0.0053	0.1359					0.4526	0.9558
								0.0000	-0.0001	0.0000	-0.0001					-0.0001	-0.0001
99	bi-chl	8	480					0.6447	0.0739	0.0062	0.4013	0.5950	0.5157	0.0075		0.5509	0.8019
			Δ					0.6446	0.0739	0.0062	0.4015	0.5950	0.5157	0.0075		0.5509	0.8021
								0.0001	0.0000	0.0000	-0.0002	0.0000	0.0000	0.0000		0.0000	-0.0002
163	g-chl	15	510			0.7051	0.2386					0.6045	0.5135	0.0040		0.5586	0.6741
			Δ			0.7044	0.2394					0.6045	0.5135	0.0040		0.5587	0.6742
						0.0007	-0.0008					0.0000	0.0000	0.0000		-0.0001	-0.0001
195	g-bi	14	680			0.7357	0.0112	0.4106	0.1706	0.0002	0.4014					0.3735	0.7582
			Δ			0.7358	0.0112	0.4107	0.1710	0.0002	0.4017					0.3736	0.7588
						-0.0001	0.0000	-0.0001	-0.0004	0.0000	-0.0003					-0.0001	-0.0006
199	g-bi-ky	8.5	680			0.7852	0.0403	0.5666	0.4441	0.0008	0.2075					0.4858	0.8892
			Δ			0.7851	0.0408	0.5672	0.4446	0.0008	0.2074					0.4864	0.8895
						0.0001	-0.0005	-0.0006	-0.0005	0.0000	0.0001					-0.0006	-0.0003
227	g-bi-chl	10	570			0.8402	0.0618	0.6230	0.2097	0.0010	0.3220	0.5483	0.5484	0.0012		0.5392	0.8391
			Δ			0.8401	0.0620	0.6230	0.2100	0.0010	0.3223	0.5485	0.5487	0.0012		0.5393	0.8395
						0.0001	-0.0002	0.0000	-0.0003	0.0000	-0.0003	-0.0002	-0.0003	0.0000		-0.0001	-0.0004
451	st-g-bi	9	620	0.8463	0.0028	0.7976	0.0415	0.5396	0.3389	0.0007	0.2859					0.4566	0.8788
			Δ	0.8466	0.0028	0.7974	0.0421	0.5401	0.3392	0.0007	0.2858					0.4572	0.8790
				-0.0003	0.0000	0.0002	-0.0006	-0.0005	-0.0003	0.0000	0.0001					-0.0006	-0.0002