

**Supplemental Table S7.** Partition coefficients and modal abundance data for models

Mineral	$D_F^{\text{min/melt}}$	$D_{Cl}^{\text{min/melt}}$
amphibole	1.5	0.31
clinopyroxene	0.13	0.025
orthopyroxene	0.11	0.012
plagioclase	0.098	0.001
apatite	10	2
opaque (ilm)	n.a.	n.a.
biotite <sup>a</sup>	3.19	1.2

Note: Mineral-melt partition coefficients for F and Cl from Dalou et al. (2012), McCubbin et al. (2015), and Van den Bleeken and Koga (2015).

<sup>a</sup> Biotite only used in H<sub>2</sub>O fluid-undersaturated fractional crystallization model with modal abundance data for sample 07-CO-MR-2 from Jacob et al. (2015). Quartz and feldspar F and Cl mineral-melt coefficients for that sample were set to zero. Biotite partition coefficient after Icenhower and London (1997) experiment SM-12. Modal abundances for State Line xenoliths after Bradley (1985).

n.a. = not applicable