Melt-PX

Read-me first:

Input parameters are: the major-element compositions of the pyroxenites (in wt. %) and the pressure and temperature conditions.
An error message (in red) appears if the input parameters fall outside of the condition range used to calibrate the model
A Comment (in blue) appears if T<$T_{5\%}$ or T>$T_{cpx\text{-}out}$. For T>$T_{cpx\text{-}out}$, melt fraction (F') calculated with a constant melt productivity equal to 0.3%/°C above the cpx-out also appears.
F calculation will not be performed if $T_{cpx\text{-}out}$<$T_{5\%}$ and the message "Error: cpx-free assemblage" will appear instead.

The spreadsheet is locked to avoid operating errors. The password to unlock the spreadsheet is pyroxenite.

INPUTS

(1) Enter the bulk composition (in wt%)

	Pyr A	Pyr B
SiO2	46.22	50.05
TiO2	0.57	1.97
Al2O3	7.69	15.76
Cr2O3	0.22	0
FeO*	9.22	9.35
MnO	0	0.17
MgO	28.83	7.9
CaO	6.05	11.74
Na2O	1.11	3.04
K2O	0.09	0.03

2) Choose pressure condition

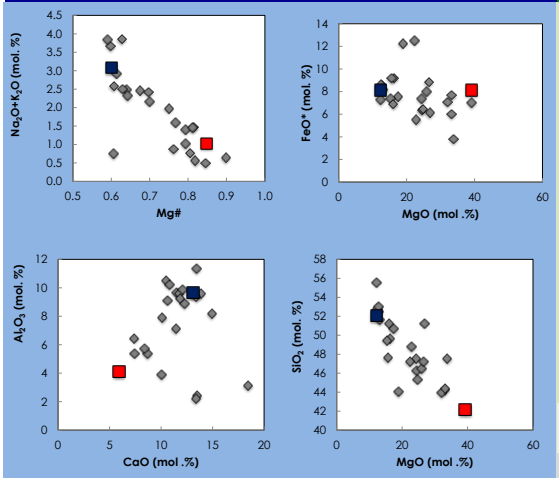
***P* (Gpa)** 3

3) Enter T

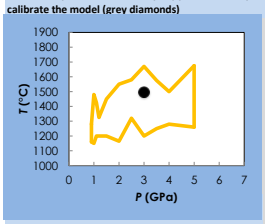
***T* (°C)** 1500

OUTPUTS

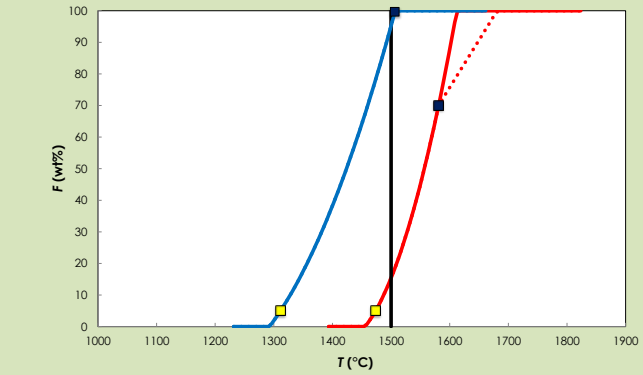
	Pyr A	Pyr B
$T_{5\%}$	1474	1311
$T_{cpx\text{-}out}$	1581	1507
***F* (wt.%)**	15.41	95.20
Comment:	*OK*	*OK*



Plot 1: Comparison between input pyroxenite compositions (Pyr A in red, Pyr B in blue) and compositions used to calibrate the model (grey diamonds)



Plot 2: Comparison between the input *P-T* conditions (black dot) and *P-T* range of experiments used to calibrate the model (open orange field)



Plot 3. *F* vs *T* for pyroxenite A (red crurve) and pyroxenite B (blue curve). The yellow and blue squares on each curve indicate $T_{5\%}$ and $T_{cpx\text{-}out}$, respectively. *F* below and above these two points are extrapolation. The dashed curves represent *F'*, i.e. the melt fraction above $T_{cpx\text{-}out}$ with a melt productivity of 0.3%/°C. The black vertical line shows the chosen temperature.