6 June, 2025

New Models:

- Zircon and apatite are added to the list of phases
- Zircons solubility models of Borisov et al. (2025) and Crisp and Berry (2022)
- Apatite solubility model of Tollari et al. (2006)
- Plagioclase-melt equilibrium model of Waters and Lange (2015)
- The effect of H2O on orthopyroxene crystallisation temperature model of Koch et al (2025)
- Olivine-melt equilibrium models of Putirka et al. (2007) and Putirka (2008)

Improvements to the algorithm:

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Changes to the GUI:

• Modified forms for selecting phase-melt equilibrium models

Bug fixes:

- When using components for output, mineral compositions were incorrectly recorded in output files during Reverse of Fractional Crystallisation calculations.
- When using components for output, names of volatiles in the melt compositions were incorrectly recorded in output files during Reverse of Fractional Crystallisation calculations
- When using components for output, names of volatiles in the melt compositions were incorrectly recorded in output files during Melt Liquidus Assemblage calculations
- Corrections to the calculated liquidus temperatures for the effect of melt H₂O contents were calculated incorrectly in versions 4.2.0 and 4.2.1 for the following options: modelling reverse of fractional crystallisation, melt liquidus association calculation, and modelling post-entrapment re-equilibration of melt inclusions in olivine.
- Quartz model of Plechov et al. (2023) was triggering an error when used with anhydrous compositions, unless a model for fluid was selected
- Fixed incorrect formatting of the output files during Reverse of Fractional Crystallisation calculations.
- Incorrect sulphate composition was recorded in the cumulative assemblage for cases when trace element contents in sulphate were defined using Ds
- Incorrect default values were set for the correction to K-feldspar (orthoclase) liquidus temperature for the melt H2O content.

• Irrelevant debugging messages were displayed when the model for CO2 solubility in the silicate melt of Shishkina et al. 2014 was used.