14 April 2024

New features:

1. Added magma replenishment functionality for the case of pure fractional crystallisation.
2. Added Nathan and VanKirk (1978) models for olivine, plagioclase, pyroxenes, magnetite, quartz, orthoclase, leucite and nepheline.
   Nathan HD, Vankirk CK 1978. A model of magmatic crystallisation. J. Petrol. 19, 66-94.
3. Added Plechov et al. (2023) model for quartz.
   Plechov PYu, Shchekleina MD, Dymshits AM 2023. Modelling of Quartz-Melt equilibrium in simlpe and complex silicate systems. New Data for Minerals, 4, 110-118, doi: 10.25993/FM.2023.57.2023.012
4. Added Zajacz and Tsay (2019) model for sulphate saturation of silicate melts.
   Zajacz Z, Tsay A 2019. An accurate model to predict sulfur concentration at anhydrite saturation in silicate melts. In: Geochimica et Cosmochimica Acta, 261, 288–304. doi: 10.1016/j.gca.2019.07.007
5. Added Wood and Blundy (1997) model for distribution coefficients of Y and REE between clinopyroxene and silicate melt.
   Wood DJ, Blundy JD 1997. A predictive model for rare earth element partitioning between clinopyroxene and anhydrous silicate melt. Contrib. Mineral. Petrol. 129, 166-181.
6. Added Lundgaard & Tegner (2004) model for partitioning of ferric and ferrous iron between plagioclase and silicate melt.
   Lundgaard KL, Tegner C 2004. Partitioning of ferric and ferrous iron between plagioclase and silicate melt. Contrib. Mineral. Petrol. 147, 470-482. https:// DOI 10.1007/s00410-004-0568-0.
   Added a parameter to the 'Select a Model to Plagioclase' form that allow users to choose whether to calculate Fe in plagioclase following the Lundgaard & Tegner (2004) model or following the selected plagioclase-melt equilibrium model.
7. Added Petrolog4 version number to the output files.

Bug fixes:

- Fixed an issue that caused incorrect calculation of a more calcic plagioclase by the model of Plechov and Gerya (1998).
- Fixed an issue that prevented loading parameters from older versions of Petrolog4.
- Fixed an issue that prevented loading saved values for D for those elements that are part of the chosen phase-melt equilibrium models.
- Fixed an issue that affected entering values for the extent of fractionation in the Crystallisation tab.
- Fixed a minor issue that affected the initial amount of H2O calculated by the Iacono-Marziano et al., 2012 model under fluid-saturation conditions.

- Fixed a minor issue that resulted in unnecessary error messages being shown to the user when aborting loading parameters from file.
- Fixed a minor issue that resulted in incorrect mineral types listed in parameters output for the Melt Liquidus Association Option.
- Fixed a minor issue that prevented calculations for the Melt Liquidus Association Option with a combination of parameters that required calculating sulphur-free compositions.