Magma Chamber Simulator (MCS) Workshop
Goldschmidt 2020 Honolulu
Sat. 20th and Sun. 21st of June 2020

Conveners:
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Thermodynamic modeling of open system magma bodies subject to serial and/or simultaneous partial melt assimilation, crustal block stoping, magma replenishment and fractional crystallization.

The Magma Chamber Simulator is a rigorous thermodynamic model (MELTS-based) for computing the evolution of a magma body and its surroundings subject to open system thermodynamic constraints. The MCS models recharge/magma mixing (R), crustal assimilation of partial melts (A) and/or stoped blocks (S) and crystal fractionation (FC) as serial and/or concurrent processes. For a magma body and surrounding wallrock, MCS tracks the thermal, mass, and compositional (major and trace element, isotope, and phase equilibria) evolution during RASFC events. The MCS RASFC scenario is initialized using a simple user-defined input file; organized tabular and graphical output makes MCS results easy to digest and interpret.

Participants will do hands-on activities running MCS. Instruction includes details regarding input files, running the code and retrieval and interpretation of output. MCS generates copious information (major and trace elements, radiogenic isotopes, and phase equilibria, masses, temperatures), and archiving and effectively utilizing output enables one to examine petrogenesis in detail. Once the basics are known, participants will be able to effectively model specific scenarios (e.g., RAFC, AFC, RFC, RSFC, etc.) of personal research interest. Small group or one-on-one training will be available on the second day.

We welcome petrologists at all levels: students, early career professionals and middle and later career professionals. With training in this two-day workshop, researchers can master the use of the code. MCS can also be used in the classroom or lab, so we welcome those who are interested in integrating MCS into their petrology/geochemistry classes.

If you have already taken an MCS workshop, please consider joining us for additional training; we will provide separate training to experienced users who wish to get feedback on specific questions/modelling challenges and/or who would like to learn how to implement the trace element/isotope module of MCS.

For more information, please go to: https://mcs.geol.ucsb.edu. This web site has more information about the Magma Chamber Simulator, the MCS team, a complete set of instructional videos, all codes needed to run MCS, and a link to publications that have implemented the MCS to gain insights into petrogenesis.

To register for the MCS short course, please go to the Goldschmidt conference website: https://goldschmidt.info/2020/eventTypeView?type=354.

We welcome your questions; please email Melissa Scruggs or Wendy Bohrson. We hope to see you in Hawaii.