

The 458th Geodynamics Seminar

Development of externally heated diamond anvil cell technique
for high temperature studies of fluids and silicate melts

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Abstract

The diamond anvil cell (DAC) is a remarkable device for the investigation of various properties of fluids, melts and minerals *in situ* directly at experimental conditions. Heating methods in the DAC experiments include laser heating, external and internal resistive heating, whole cell heating and inductive heating (Smith and Fang, 2009). One of the main disadvantages of laser-heating method is a steep temperature gradient within the sample (e.g., Rainey et al., 2013), which makes it difficult to reach thermal and chemical equilibrium during experiment.

In this presentation I will focus on recent progress in the development of external resistive heating system for the DAC experiments. Two mechanisms of heat transfer to the sample, namely conduction and radiation, will be described and performance of various materials as heating elements will be reviewed. I will further discuss advantages and limitations of these heating methods and give the outlook of their future application for high-temperature, high-pressure DAC experiments.

詳細は当センターホームページ: <http://www.grc.ehime-u.ac.jp/> をご覧ください
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