

**Report for the Joint Use/Research of the Institute for Planetary Materials, Okayama
University for FY2023**

May/28/2024

Category: International Joint Research General Joint Research Joint Use of Facility
Workshop

Name of the research project: Radiative thermal conductivity of the Earth's mantle

Principal applicant: Sergey S. Lobanov

Affiliated institution and department: GFZ German Research Centre for Geosciences

Collaborator

Name: Takayuki Ishii

Affiliated institution and department: Earth and Planetary Materials Sciences", Institute for Planetary Materials (IPM), Okayama University

Research report:

The end research purpose is to quantify the radiative thermal conductivity of bridgmanite, the most abundant mineral of the lowermost mantle. This requires high-quality single crystals of bridgmanite. IPM staff has a proven expertise in accomplishing this task. This is why applied for the joint Use of the IPM facilities.

Unfortunately, because of the delays in delivering ^{57}Fe , we are still under preparation of starting materials. We plan to initiate synthesis experiments this year once we complete preparing the starting materials. To initiate our collaboration, an alternative strategy that involves synthesis by direct conversion of $(\text{Mg,Fe})\text{SiO}_3$ glass to bridgmanite has been put in place.