

The 19th Global-COE International Frontier Seminar

May 31st, 2010, from 10:30, at the room#486 meeting room 4F

Melting of peridotite to 140 GPa

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Complex geological processes within the lowermost mantle are keys to our understanding of Earth's evolution and present-day inner composition. Among such processes, partial melting has been proposed to explain mantle regions with ultralow seismic velocity near the core-mantle boundary (CMB). To test this hypothesis, the solidus curve of a natural fertile peridotite, approximating the composition of the primitive mantle, was determined in laser-heated diamond-anvil cells between 36 and 140 GPa. Melting at CMB pressure occurs at $4180 \pm 150\text{K}$, a value matching estimated mantle geotherms. Molten regions may therefore exist at the base of the present-day mantle. Together with melting phase relations and element partitioning data, our results are also used to discuss the geochemical implications for early mantle differentiation.

31 May 2010 10:30-11:30
Room486, meeting room 4F
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