

Principal Researcher	Eiji Ohtani			Number of Researchers	4	
Research Institution · Department · Title	Professor , Tohoku University , Institute of Mineralogy Petrology and Economic Geology,			Location of Institution	Sendai	
Title of Project	Ultra-high Pressure Earth Science of core and core-mantle boundary					
Abstract of Research Project	<p>This research project focuses three main topics, structure and nature of the earth's core, origin and nature of the core-mantle boundary, which has anomalous properties in seismic wave velocity, and formation and evolution of the core. First, we clarify the phase transition and equation of state of the alloys relevant to the core, such as Fe-Si, Fe-S, and Fe-O systems under the core conditions. The second topic is to clarify the nature of the reaction between molten iron and the lower mantle silicates at the core-mantle boundary. We will use Laser Heating Diamond Anvil Cell and intense X-ray from the synchrotron radiation such as PF and SPring8. The third topic is to clarify the elemental partitioning between molten iron and magma under the magma ocean conditions, and we will test the working hypothesis of the chemical equilibrium between the metal and silicate in the magma ocean stage of the Earth. Summarizing the research on these three topics, we can approach the final goals to clarify the nature and evolution of the Earth's core.</p>					
References	<p><u>Ohtani, E. and M. Maeda</u>, Density of Basaltic Melt at High Pressure and Stability of the Melt at the Base of the Lower Mantle, <i>Earth Planet. Sci. Lett.</i>, 193, 69-75, 2001.</p> <p><u>Ohtani, E., H. Yurimoto, S. Seto</u>, The element partitioning between metallic liquid, silicate liquid, and lower mantle minerals: Implications for the core formation of the Earth. <i>Phys. Earth Planet. Inter., Phys.</i>, 100, 97-114, 1997.</p>					
Term of Project	Fiscal years 2002-2006. (5 years)					
Budget Allocation (in thousand of yen)	FY2002	FY2003	FY2004	FY2005	FY2006	TOTAL
	29,300	26,800	14,400	6,100	6,100	82,700
Homepage Address	http://rance.ganko.tohoku.ac.jp/					