The 399th Geodynamics Seminar

Experimental study on the phase transition and stability of $CaSO_4$ at high P-T

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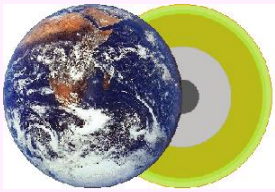

EHIME UNIVERSITY GRC GEODYNAMICS RESEARCH CENTER

Abstract

Sulfur (S) is one of the ubiquitous elements in the crust occuring mostly as sulfides (MS_x) and sulfates (SO_4^{2-}). Recent studies suggest that the sulfate and sulfide minerals are recycled not only in the crust but also into the deep mantle through subduction, and the sulfur transported by such events is expected to play a role in the oxidation of the mantle wedge. Therefore, it is important to investigate the stability and reactivity of sulfate and sulfide minerals in the mantle condition.

Anhydrite ($CaSO_4$) is one of the most common sulfate minerals in the Earth's surface. Previous studies reported six polymorphs of $CaSO_4$ at high pressure and temperature: anhydrite, monazite-, barite-, $AgMnO_4$-type, orthorhombic- and unknown-phase. However, the detailed stability and phase relations investigation of these phases have not been well understood. So, we performed in situ X-ray diffraction experiments using a leaser heating diamond anvil cell and multi-anvil apparatus at KEK and SPring-8 and examined the phase relations and stability of $CaSO_4$ up to 90 GPa, 2400 K. In this presentation, I will talk about the details of the results and discuss the significance and future plane.

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