

The 447th Geodynamics Seminar

Partial melting of $K_{0.20}Na_{0.80}AlSi_3O_8$ and $K_{0.05}Ca_{0.10}Na_{0.85}Al_{1.1}Si_{2.9}O_8$
at 21 GPa and its implication for the shock metamorphism of
plagioclase in heavily shocked meteorites

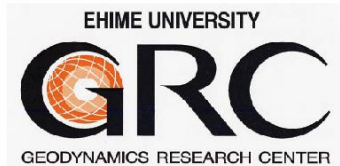
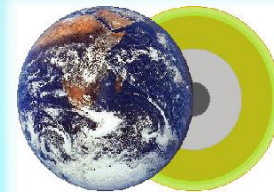
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Date: 15 July (Fri.) 2016, 16:30 ~

**Venue: Meeting Room #486, Science
Research Bldg. 1, Ehime Univ.**

日時: 2016年7月15日 (金) 16:30~

**場所: 愛媛大学 総合研究棟 I
4階共通会議室**



Abstract

High-pressure phases discovered in the shock veins of meteorites are signatures of shock metamorphism, which provide important information about the collision among celestial bodies during the formation of the early solar system. It is widely found that plagioclase, one of the major constituent minerals of meteorites, transformed into maskelynite (plagioclase glass), lingunite (hollandite with Na contents of 80-85 mol %) and/or jadeite in the shock veins of meteorites. However, such shock metamorphism of plagioclase is not well understood. Although the phase relations of feldspar end-members and some of their solid solutions have been widely studied under high-pressure and high-temperature (HPHT) conditions using both static and dynamic high-pressure techniques, the shock-metamorphic phase assemblages of plagioclase found in the shock veins of meteorites have not been interpreted reasonably. To understand the shock metamorphism of plagioclase in heavily shocked meteorites, I did multi-anvil experiments using feldspathic starting materials with compositions close to that of the typical plagioclase in meteorites. Phase assemblages of Na-rich hollandite + stishovite + jadeitic melt and Na-rich hollandite + Na-rich CAS phase + stishovite + melt are representative at 21 GPa and 2800 K for the compositions of $K_{0.20}Na_{0.80}AlSi_3O_8$ and $K_{0.05}Ca_{0.10}Na_{0.85}Al_{1.1}Si_{2.9}O_8$, respectively. These results bring us not only knowledge about the phase relations of feldspars at HPHT and also challenges and prospects in understanding the shock metamorphism of plagioclase in heavily shocked meteorites. In this presentation, I will talk about the details.

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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