Geodynamics Seminar

第297回ジオダイナミクスセミナー

Experimental study on the phase transition of graphite to lonsdaleite (hexagonal diamond)

Speaker : Hiroaki Ohfuji
(Assistant Professor)

主催：愛媛大学地球深部ダイナミクス研究センター
日時：2011/6/17（金）午後 4時30分～
場所：総合研究棟4F　共通会議室

Abstract

Lonsdaleite (hexagonal diamond) is a metastable polymorph of carbon and occurs as microscopic crystals associated with cubic diamond in meteorites such as the Canyon Diablo meteorite and in impact craters. Recent theoretical studies reported a possibility that lonsdaleite has indentation strength and a bulk modulus comparable to or even greater than those of cubic diamond. However, such physical properties of hexagonal diamond have not experimentally investigated due to a difficulty in synthesizing a single-phase bulk sample. Here, we investigated the P-T conditions required to obtain single-phase lonsdaleite from highly-oriented graphite through a laser-heated DAC experiments at pressures of 15, 25 and 50 GPa and temperatures ranging 1400-3300 K. The details of the martensitic transformation mechanisms, in particular, the lattice (coaxial) relations between the two phases were also examined through TEM observations of the recovered products.

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
問い合わせ先：桑山靖弘（TEL:089-927-8408,e-mail:kuwayama@sci.ehime-u.ac.jp）