Geodynamics Seminar

第374回ジオダイナミクスセミナー

Crystal growth process of ballas, a polycrystalline spherical diamond

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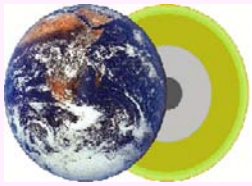
主催：愛媛大学地球深部ダイナミクス研究センター
日時：1/24（金）午後 4時30分～
場所：総合研究棟Ⅰ 4F 共通会議室



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Abstract

In the present study, ballas diamonds, natural polycrystalline diamond with a spherulitic shape were studied to understand the crystallographic orientation distribution of the constituent crystals and their crystallization mechanism. In total six ballas samples were analyzed by using electron backscattered diffraction (EBSD) technique after sectioned by laser-cutting and crystal growth process of ballas, a polycrystalline spherical diamond polished to prepare cross-sections. Orientation imaging obtained by using fore-scattered electrons showed that all the ballas samples consist of columnar to fibrous crystals which have been grown radially from the core. EBSD analysis revealed that 1) each fibrous-columnar crystal is in contact each other by relatively high-angle misorientations (10-40°) and contains subdomains with smaller-degree (< 10°) misorientations, and 2) the crystallographic distribution of individual crystals is rather single-crystal-like as a whole. This means that ballas is not an aggregate of radially grown [110] or [111] elongated crystals as has been though. In the case of high speed crystal growth, the fibrous crystals are formed (Sunagawa, 1972). It suggests that the ballas has been formed in the high supersaturation fluid.

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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