Comparative petrologic study of ophiolitic rocks in the Japanese Islands and Russian Far East

2000 Fiscal Year Final Research Report Summary

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Research Project

Project/Area Number

10640462

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

Petrology/Mineralogy/Science of ore deposit

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

1998 – 2000

Keywords

ophiolite / the Inner Zone of Southwest Japan / Russian Far East / Sikhote Alin, Primorye / Omi-Renge metamorphic rocks / eclogitic blueschist / Tamba and North Kitakami belt / accreted greenstone

Research Abstract

(1) Research in Japan. Western part of the Yakuno ophiolite exposed in the Kamigori area constitutes a crustal section of the late Paleozoic oceanic island arc. The coexistence of Ca-rich plagioclase and Fe-rich clinopyroxene in the metagabbro as well as highly depleted incompatible trace elements in amphibolite support this identification, which is also confirmed by the finding of shoshonitic rocks. We measured K-Ar age of hornblende from metacumulates of the Oeyama ophiolite, and confirmed their early Paleozoic age (400-440 Ma). We find eclogitic glaucophane schist from the Renge blueschist belt in the Omi area. This finding proves that the Renge metamorphism reached the eclogite facies. In the Jurassic accretionary complex of the North Kitakami belt in Aomori Prefecture, we find that the accreted volcanic rocks (greenstones) are mostly of ocean-island tholeiite origin. This clearly contrasts to the reported alkali basalt origin, which predominates greenstones in the southern Iwate Prefecture area, and proves magmatic diversity of the accreted seamounts.
(2) Research in Russia. The Elistratova ophiolite in Taigonos Peninsula at the southern edge of the Koryak Mountains shows peculiar occurrence, where a stratified sequence of an island-arc ophiolite intrudes into the oceanic mantle peridotite. Extreme diversity in the degree of depletion of mantle peridotite along the eastern coast of Taigonos Peninsula is also revealed. In Primorye, we find that the Cambrian Khanka ophiolite shows distinct "passive continental margin" occurrence clearly different from

the other "accretionary" early Paleozoic ophiolites in the Sikhote Alin accretionary system. Our petrologic and geochronologic study of the associated blueschist revealed close analogy between Oeyama ophiolite-Renge blueschist pair in Japan and the "accretionary" early Paleozoic ophiolite-late Paleozoic blueschist pair in Primorye.

Research Products (18 results)

All | Other

All | Publications

[Publications] 石渡明: "西南日本内帯の古生代海洋性島弧地殻断片:兵庫県上郡変斑れい岩体"地質学論集. 52. 273-285 (1999)

[Publications] 斎藤大地,石渡明,辻森樹,宮下純夫,S.D.Sokolov: "ロシア極東,タイガノス半島のエリストラートバ・オフィオライト:海洋底マントルに貫入する島弧オフィオライト"地質学論集. 52. 303-316 (1999)

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[Publications] Shcheka,S.A.,Ishiwatari,A.,Vrzhosek,A.A.: "Geology and petrology of Cambrian Khanka ophiolite in Primorye (Far East Russia) with notes on its manganese-rich chromian spinel"地球科学. 55(印刷中). (2001)

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[Publications] 「北陸の自然をたずねて」編集委員会(代表:石渡明): "北陸の自然をたずねて"築地書館. 242 (2001)

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[Publications] Ishiwatari, A.: "Fragment of Paleozoic oceanic island arc crust in the Inner Zone of southwestern Japan : The Kamigori metagabbro body, Hyogo Prefecture."Mem.Geol.Soc.Japan. 52. 273-285 (1999)

[Publications] Tsujimori, T., Nishina, K., Ishiwatari, A.and Itaya, T.: "443-403 Ma kyanite-bearing epidote amphibolite from the Fuko Pass metacumulates in the Oeyama area, the Inner Zone of southwestern Japan."Jour.Geol.Soc.Japan. 106. 646-649 (2000)

[Publications] Tsujimori, T., Ishiwatari, A.and Banno, S.: "Discovery of eclogitic glaucophane schist from the Omi area, Renge metamorphic belt, the Inner Zone of southwestern Japan."Jour.Geol.Soc.Japan. 106. I-II (2000)

[Publications] Tsujimori, T., Ishiwatari, A.and Banno, S.: "Eclogitic glaucophane schist from the Yunotani valley in Omi Town, the Renge metamorphic belt, the Inner Zone of southwestern Japan."Jour.Geol.Soc.Japan. 106. 353-362 (2000)

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