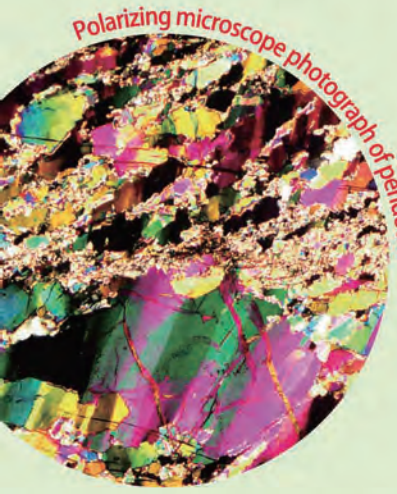
Mt. Apoi was formed together with the Hidaka mountain range.

During the building stage of Hidaka mountains, 13 million years ago, Mt. Apoi was formed on the boundary between two major plates of the northern hemisphere, the North American plate (Okhotsk) and the Eurasian plate (Asia).
The plutonic rocks and the metamorphic rocks of the Hidaka mountains were generated at high-temperature and high-pressure conditions of deep-seated lithosphere beneath the south-western edge of Paleo-Kuril arc on the south-western border of the North American Plate. Then, the rocks of the deep-seated lithosphere thrust up westward on the eastern margin of the Eurasian Plate. At that time, the Mt. Apoi peridotite was detached from the upper mantle, about 60 km deep, and then pushed up to the earth's surface.

Polarizing microscope photograph of peridotite



Upper mantle minerals

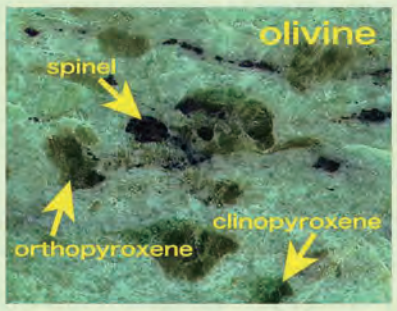
When you look at peridotite carefully, it contains the minerals of the upper mantle.

olive-green minerals
olivine: $(Mg, Fe)_2 SiO_4$

brown minerals
orthopyroxene: $(Mg, Fe) SiO_3$

emerald-green minerals
clinopyroxene: $(Ca, Mg, Fe) SiO_3$

black minerals
spinel: $(Mg, Fe) O \ (Cr, Al)_2O_3$

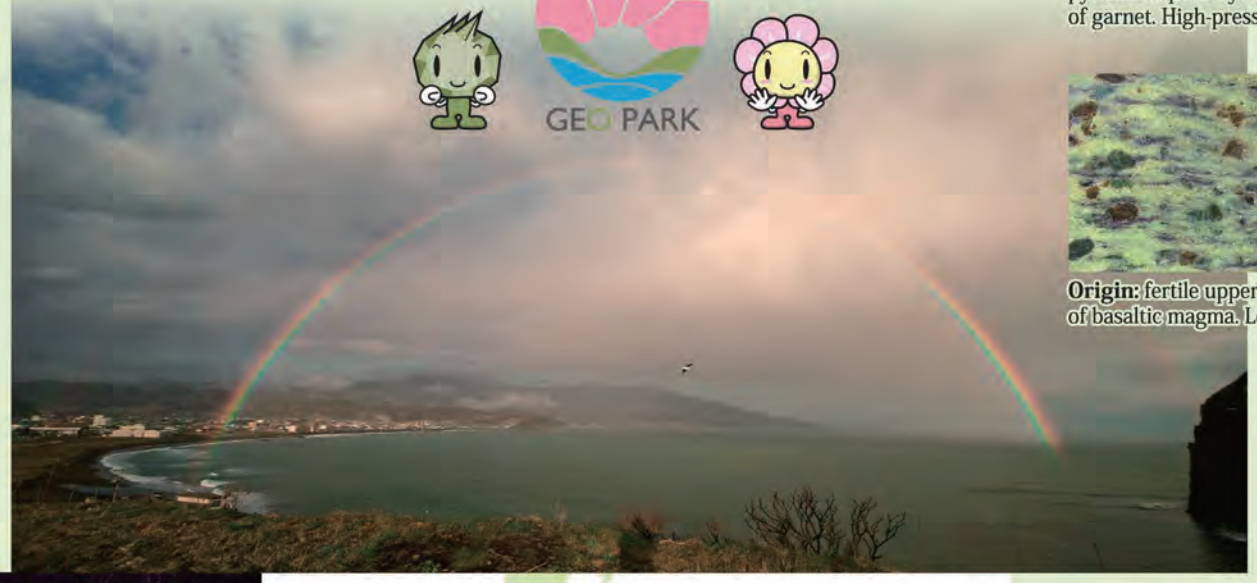


Mg : Magnesium
Fe : Iron
Si : Silicon
O : Oxygen
Ca : Calcium
Cr : Chromium
Al : Aluminum

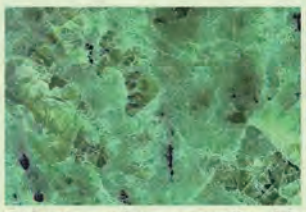
Mt. APOI

GEOPARKS JAPAN

Mt. Apoi is a member of Japan Geoparks Network that Global Geoparks Network unifies.



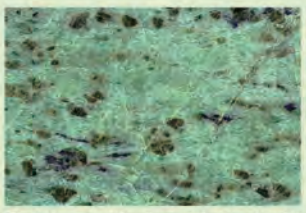
A variety of peridotite types



dunite

Minerals: olivine (olive-green) and spinel (black), including megacrystic single crystals of olivine.

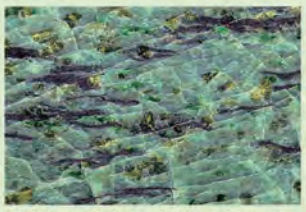
Origin: peridotite crystallized from basaltic magma channeled through the upper mantle.



harzburgite

Minerals: olivine (olive-green), ortho-pyroxene (brown), clinopyroxene (emerald-green), and spinel (black).

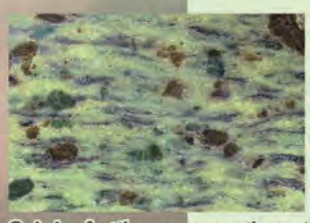
Origin: residual peridotite highly depleted in basaltic magma components after partial melting of upper mantle peridotite.



lherzolite

Minerals: olivine (olive-green), ortho-pyroxene (brown), clinopyroxene (emerald-green), and spinel (within reddish purple mineral seams).

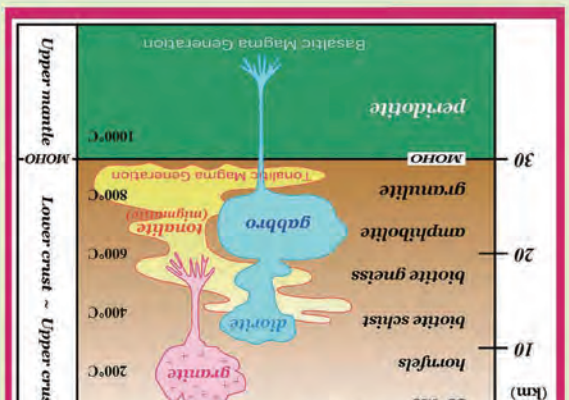
Origin: slightly depleted upper mantle peridotite, containning pyroxene-spinel symplectites after decompressional breakdown of garnet. High-pressure type.



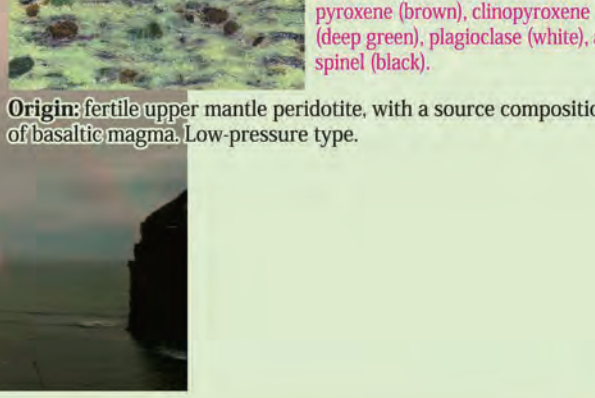
plagioclase lherzolite

Minerals: olivine (olive-green), ortho-pyroxene (brown), clinopyroxene (deep green), plagioclase (white), and spinel (black).

Origin: fertile upper mantle peridotite, with a source composition of basaltic magma. Low-pressure type.



Model for the Hidaka crust-mantle



Where did the peridotite come from?

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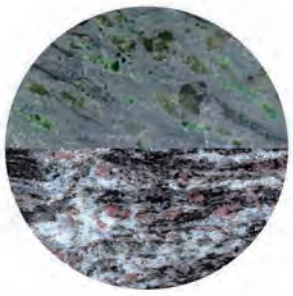

Mt. Apoi

PERIDOTITE PLAZA

~ seeing, touching, and feeling ~

HOKKAIDO SAMANI TOWN

Mt. APOI GEO PARK

GEOPARKS JAPAN

ASIA PACIFIC GEOPARKS NETWORK

JAPGN

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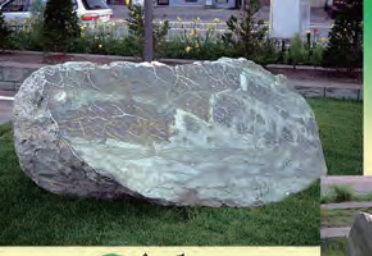
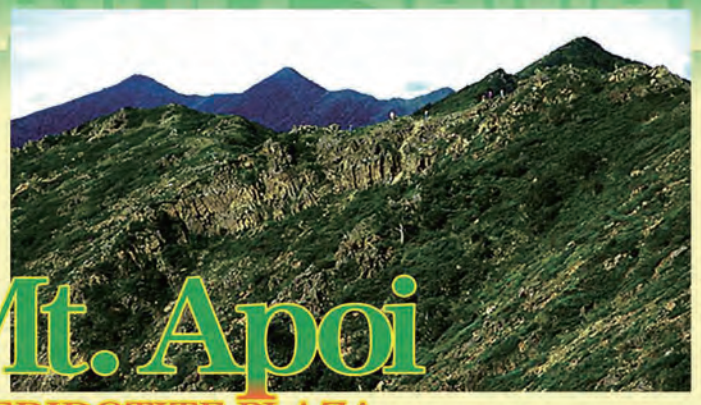
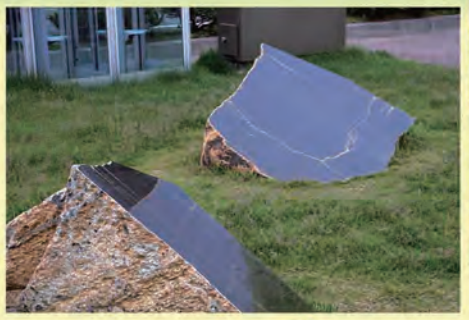


A-1 A-4 A-3 A-2 T Q-1 Q-2

Mt. Apoi

PERIDOTITE PLAZA

~ seeing, touching, and feeling ~

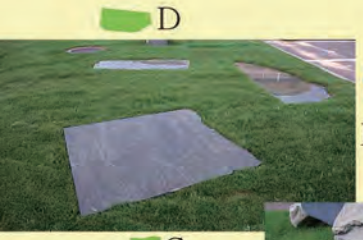
Here we feel the blessings and throbbings of the earth
Several ten kilometers deep, the earth's mantle gave birth
To a peridotite mountain by the name of Mt. Apoi

There, the peridotite acts as a basaltic Magma Source
Thrust up into the crust with a dynamic movement
Exposed on the earth's surface
When the Hidaka mountain range was formed

Here lie the peridotites, filled with olive-green minerals
Pyroxenes and spinels
Retaining their original textures and compositions
Geologically significant, showing the origin of the earth

Emerged from the earth's hot interior
Nurturing a variety of Alpine flowers
Mt. Apoi is a beautiful mountain
Here we live forever

O



B-1 D B-2

C

E

F

G

H

I

Commemoration of Eiichi Sugimoto's ambition
(July, 1999)
Presented by Mrs Haruko Sugimoto and Mr Sadashi Sugimoto
Planned and made by Minami-gumi Co., Ltd.
Supervised by Dr Kiyoaki Niida of Hokkaido University

Looking inside peridotites as peeping inside the earth, we can see various views of the inside of the earth.

Please touch these big specimens and sit on them.
We can well understand the temperature and the hardness of the stones.

The stones send us various messages. See..... little by little can't you hear the beating of Mt. Apoi?

A-1-4 : dunite cumulates with harzburgite
B-1-2, G, J, L, R : dunite dykes in harzburgite
C, D, E, F ,W : harzburgite
H, I, K : lherzolite with pyroxene spinel symplectites
P, S : gabbroic layers (Type GB I) in plagioclase lherzolite
Q-1-2 : plagioclase lherzolite
M, N : tonalite (migmatite)
O, T : olivine gabbro
U : hypesthene gneiss
V : granulite

R

P

L

U

N

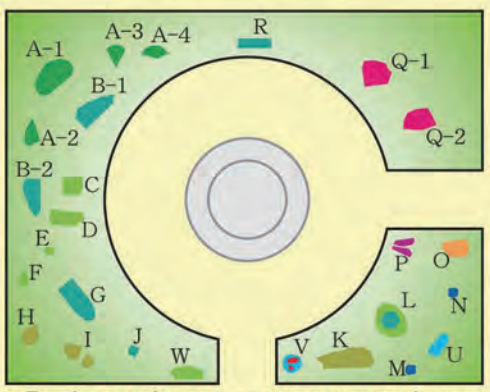
V

K

M

J

W



Rock specimens arrangement chart

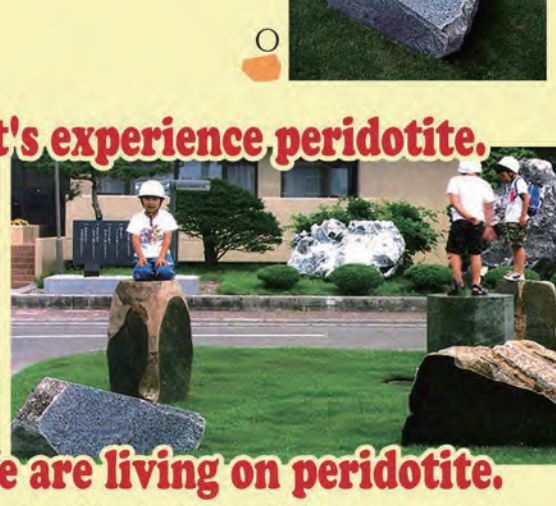
T

S

S

Panorama view of Mt. Apoi Peridotite Plaza

We are living on peridotite.



Let's experience peridotite.

Mt. Apoi is a worldwide science specimen

Mt. Apoi is a worldwide science specimen
A number of researchers, scientists and students, visit Mt. Apoi not only from Japan but also from foreign countries every year. The peridotite of Apoi is very fresh. The minerals in the peridotites are olivines, pyroxenes, and spinels, and can be observed in the same state as they were in the high temperature and high pressure upper mantle. Academically they are extremely valuable rock materials to research the formation and the rising movement of the magma.

Magma channels can be clearly seen.