

Monazite Deposits in Korea

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Locality: Sin'am-dong and Posan-dong, Paengnang-myŏn, Ch'ŏlsan-gun, P'yŏngan-pukto.

Location: About 23 km west of Ch'aryŏn'gwan Station on the Kyŏngsŏng-Sinŭiju Line, facing the Yellow Sea.

Introduction:

Placer deposits of monazite have been known on the east coast of Korea, and in river beds in other parts of Korea. Monazite occurring in veins, however, was not known before 1943, when a pegmatite with large crystals of monazite was discovered in the above locality. When I visited there in March 1943, only a small part of the deposit was exposed. But since it seemed promising, the Nichitsu Mining Co. Ltd. obtained mining rights and engaged in the exploitation of the vein deposit and monazite sand in the vicinity. It was known as the Sŏnam Mine.

Geology:

The district is generally composed of gray granite-gneiss, intruded by porphyritic biotite granite, lamprophyre, pegmatite and quartz veins. The porphyritic biotite granite on the branch road from Changnae to Kibong-dong has xenoliths of gray granite-gneiss and pegmatite. At Posan-dong a granite-containing garnet and two kinds of mica were exposed; their chronological relation to the gray granite-gneiss is not clear.

The pegmatite dykes and quartz veins are not large, but are exposed here and there, and contain quartz characterized by its gray or faint pink color. The quartz is similar to that in pre-Cambrian granite-gneiss found in other parts of Korea. The pegmatite dykes may also be of pre-Cambrian age. Some of these are drusy and are accompanied by monazite, forming monazite deposits. Alluvial deposits are found in narrow areas in the valleys and those near pegmatite deposits contain monazite, forming placer deposits of monazite.

The Pegmatite Deposits:

The pegmatites forming monazite deposits in this district are found at Posan-

dong and Sin'am-dong, and the monazite placers, originating from the pegmatite deposits are found on the river bed of the Posan-ch'ön river, the beach of Sin'am-dong and the coastal sand dunes of Kibong-dong.

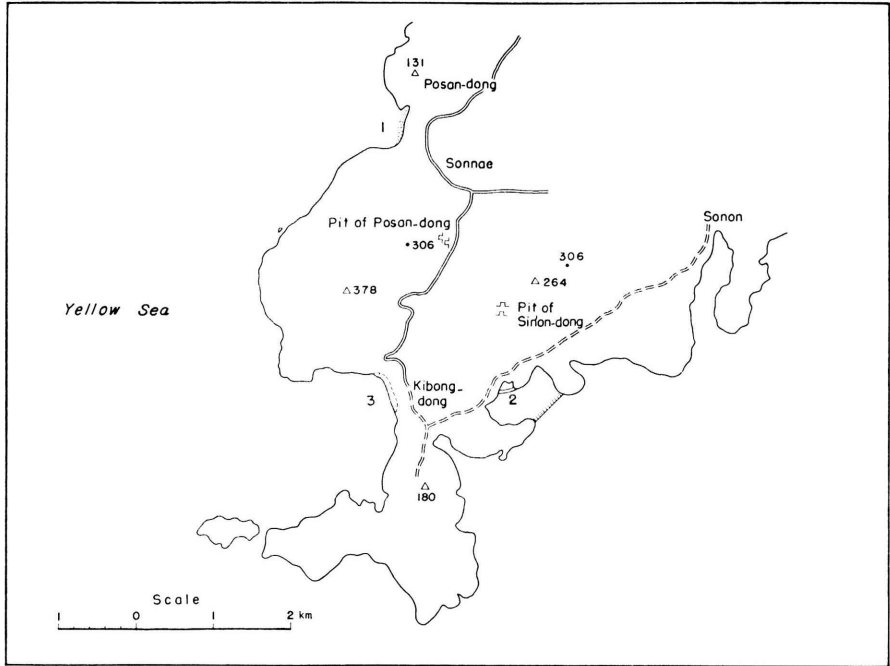


Fig. 1. Monazite Deposits of Korea.

1. Placer deposit of Posan-dong;
2. Placer deposit of Sin'am-dong;
3. Placer deposit of Kibong-dong

Deposits at Posan-dong:

The deposits are typified by xenoliths of drusy pegmatite with monazite, in a medium-grained garnet granite. The pegmatite is composed chiefly of biotite, faint grayish or pinkish quartz, and a small amount of gray feldspar. The mica is brittle, iron black in color and is found in large block-shaped crystals, some being over 30 cm in diameter and 20 cm in thickness, although commonly less than 5 cm in diameter. Perhaps it is a biotite rich in iron.

Monazite is generally found in portions of pegmatite rich in mica. It is brown in color and does not have a good crystal form. It occurs in various sizes and some crystals are as large as a man's fist; the largest individual crystals are more than 1,300 grams, but in general they are smaller than Indian bean. Accessory minerals include only a small amount of apatite and ilmenite.

The Deposit at Sin'am-dong:

Pegmatite containing monazite is exposed on a mountain slope, about 1,200 m north of Sin'am-dong and is of drusy type. The strike of the deposit is N 40° W or so, gently dipping in a north-easterly direction; its thickness is 2.5 m at the en-



Fig. 2. Monazite. Loc. Posan-dong.

trance of the gallery and gradually pinches out along dip. The pegmatite is drusy and a zonal structure, due to the parallel arrangement of fine scale of biotite, is seen around the druses. Small crystals of monazite are contained in the parts with zonal structure. The druses themselves consist of a zonal arrangement of microcline in the lower zone, and biotite and quartz in the upper zone; monazite, ilmenite and garnet are found in the upper zone.

Placer Deposits:

Placer deposits include more important monazite deposits than the pegmatites mentioned above. Placer monazite may be formed by the weathering of pegmatite deposits.

1. *The river placer deposit of Posan-ch'ŏn:* Contains 0.04–0.05% monazite less than 30 mesh in grain-size, and is accompanied by ilmenite and garnet.

2. *The beach placer deposit of Sin'am-dong:* The monazite is concentrated by the action of sea waves and forms high-grade placers. It originates from the deposit of a coastal terrace that is more promising than the former.

3. *The beach placer of Kibong-dong:* This placer is found in the lower part of the coastal terrace of Kibong-dong and is one meter in thickness. It has a higher grade of monazite than that of the river placer at Posan-ch'ŏn.

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