

Quartz-bearing jadeitite from the Nagasaki Metamorphic Rocks, Nishisonogi peninsula, western Kyushu, Japan

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The Nagasaki Metamorphic Rocks in the Nishisonogi peninsula, Kyushu, Japan mainly consist of pelitic and psammitic schists with small amounts of metabasite complexes and serpentinite bodies (Nishiyama, 1989). They belong to the epidote-blueschist subfacies of metamorphism. In the Nagasaki Metamorphic Rocks, jadeitite has been found only at the Mie area (Nishiyama, 1978). The jadeitite occurs as tectonic blocks in the metabasite complex and is free from quartz. Quartz-bearing omphacite rock is also found at this area, whose omphacite yields Jd30 (Nishiyama, 1989).

We found quartz-bearing jadeitite in the Nagasaki Metamorphic Rocks at a new locality far from the Mie area. The quartz-bearing jadeitite occurs as floats of 1 to 4 meters in diameter. Floats of serpentinite, albitite and zoisite-white mica rock also occur around the quartz-bearing jadeitite. One of the quartz-bearing jadeitite blocks is included by the zoisite-white mica rock. These are floats in a river below the outcrop of the metabasite complex which contains many tectonic blocks. These occurrences suggest that the quartz-bearing jadeitite was originally tectonic blocks in the metabasite complex.

The quartz-bearing jadeitite is a pale bluish green, massive, dense and tough rock and is completely recrystallized. It mainly consists of jadeite with small amounts of white mica, albite, zoisite. Under a microscope, the jadeite occurs as colorless anhedral columnar grains (approximately 4 mm long) with random orientation. Each jadeite grain has dusty core with quartz and omphacite inclusions and clear rim free from them (Fig. 1). The quartz inclusions of 1-20 micrometers in diameter are in directly contact with the host jadeite. The jadeite has almost pure NaAlSi₂O₆ composition (Jd90 to Jd100) at both the cores and rims. It has nearly pure NaAlSi₂O₆ composition even at the contact with the quartz inclusions. This texture suggests that the core jadeite with quartz nucleated by decomposition of albite, and then the rim jadeite free from quartz formed by further decomposition of albite with loss of SiO₂ from the system.

The quartz-bearing jadeitite is characterized by paragenesis of almost pure jadeite and quartz as described above. This assemblage is not stable in the epidote-blueschist subfacies, and requires higher-pressure than the metamorphic condition of the Nagasaki schists (e.g., the lawsonite-blueschist subfacies). These findings suggest that the quartz-bearing jadeitite represents a tectonic block derived from deeper part of the Nagasaki Metamorphic Rocks, which was emplaced into the schists during exhumation of the metabasite complex.

Fig. 1. Photomicrograph of quartz-bearing jadeitite showing jadeite grains with dusty core. Abbreviations: Jd = jadeite, Qtz = quartz, Omp = omphacite.

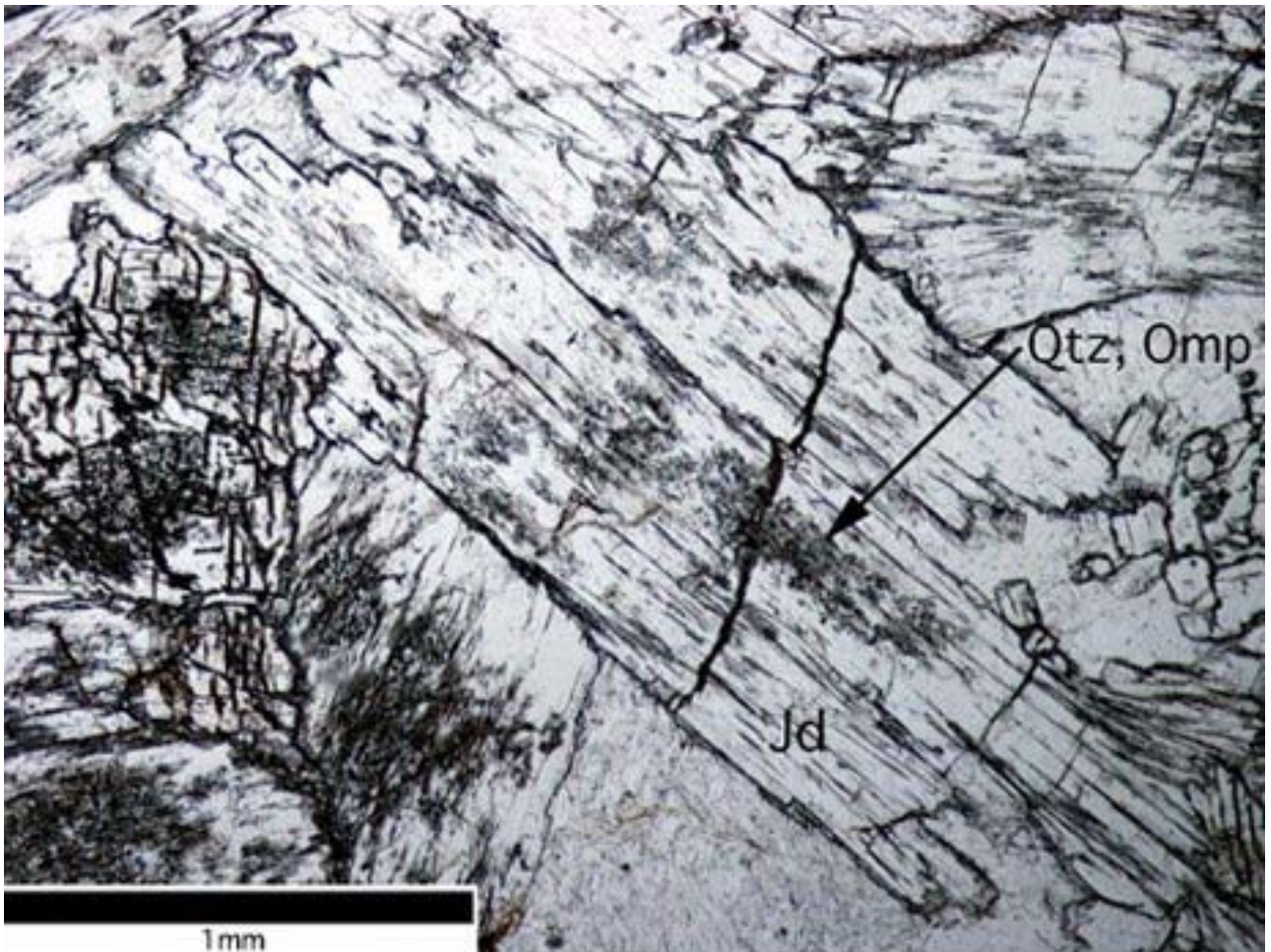


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Abbreviations: Jd=jadeite, Qtz=quartz, Omp=Omphacite