

Mid-Mesozoic Granites and Mineralisation in Hong Kong

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Hong Kong lies at the southeast margin of the Mesozoic magmatic belt of the Cathaysia block of southeast China. It is in the centre of the Arcuate coastline which is backed by mainly Jurassic-Cretaceous granite and acid volcanic rocks. In plate tectonic terms, it grew southeast in a northwest dipping subduction zone in Jurassic time, perhaps aided by deep torsion. Hong Kong is only a small part of this, 900 square kilometres, yet some 18 granite plutons and 15 volcanic formations have been recognised. For our purpose, three main areas are defined based on associated mineral type as in this table.

	Northwest	Centre	Southeast
Granite type ¹	I, A	Mixed	A
Granite age (Ma)	165	142-147	140
Mineral type	Sn, W	<u>W</u> Mo F ²	Be Li F
Acid porphyry	<u>Pb Ag</u>	<u>Pb Ag</u>	-
Acid volcanic	-	Cu Pb Zn	-
Tectonic	Subduction	Dyke swarm	Extension
Strike slip	Dextral	Torsion	Sinistral

¹ An early granite is of mid- Triassic age (S-type)

² Underlined, commercial

Mineralisation within and adjacent to the granite is in fissure veins, pegmatites, stockworks and greisens. Hypabyssal acid porphyries are host to lead-silver ores. A large magnetite body in the central area is a skarn deposit with steatization between granite and limestone. Local concentrations of copper, zinc and lead occur in sediments interbedded in the volcanic rocks. Fossil plants in the sediments are dated as between mid-Jurassic to Wealden. Fluorine in the southeast is associated with lithium and beryllium in unusual greisens. The white mica has 4.6% fluorine, 1.2% lithium oxide and 1% magnesia. Major and trace elements will be discussed in the poster.

Contact metamorphism around the granite is locally high grade hornfels; up to sillimanite grade. In all but eastern Hong Kong most of the acid volcanic rocks show recrystallisation (annealing) in the ground mass sometimes to a polygonal mosaic. Local hydrothermal zoning is common.

There are close similarities in chemistry between Hong Kong granitoids and those in the Altai Mountains in Russia. Monzonitic, shoshonitic and peraluminous granites are cut by granite porphyry. They have W-Mo too, but tantalum not tin. Protolithionite and topaz are common to both suites.