

The Mineralogy and Petrography of the Anderson Lake Pegmatite Occurrence, Quetico subprovince, Ontario

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Anderson Lake Pegmatite is a granitic pegmatite derived from the Hilma Lake Granite within the Quetico Terrane of the Southern Superior Province. The pegmatite is roughly N-S trending, occurring along the contact between the Hilma Lake Granite and host metasediments. The Hilma Lake granite is generally equigranular and coarse-grained with alkali feldspar, plagioclase, biotite, muscovite, quartz and minor titanite, garnet and cordierite. The biotite within the Hilma Lake granite has been completely altered and replaced to chlorite and many of the fractures within the garnet also contain chlorite. This study has classified the Hilma Lake intrusion as a monzo-granite to a syeno-granite. The pegmatite mineralogy is peraluminous, dominated by alkali feldspars, plagioclase, thick muscovite books and quartz with minor beryl. Many stripped exposures of the pegmatite are molybdenum-bearing. The molybdenum is occurring as coarse-grained, euhedral molybdenite florets to subhedral pods within the pegmatite and also within quartz veins which cross-cut the pegmatite. In multiple exposures the molybdenite has been altered to ferrimolybdenite. The accessory ore mineralogy includes very minor amounts of fine-grained pyrite, galena and magnetite. The molybdenite within the quartz veins occurs as euhedral laths. Galena and pyrite occur as fine-grained and euhedral within the quartz veins and granite. The magnetite is associated with chlorite within the granite. Where the pegmatite is molybdenite-bearing, the feldspars are weathered to sericite, some to a degree where thin muscovite laths have grown within the crystal. Textures within the pegmatitic feldspars range from graphic near the contact with the metasediments to perthitic and myrmekitic. Cross-cutting the pegmatite and the molybdenite veins are vuggy quartz veins infilled with sugary quartz crystals and amethyst. Re-Os dating of the molybdenite from the pegmatite reveals an age of 2789 +/- 12 Ma. Within the Quetico Terrane, plutonism and metamorphism was dated at 2671-2667 Ma with a later pegmatite injection at 2653 Ma. The age of the molybdenite mineralization within the Anderson Lake Pegmatite predates the known ages of the pegmatites and granites within the Quetico. The Anderson Lake Pegmatite is an S-type granitic pegmatite which is derived from the S-type Hilma Lake Granite.