

**Leucogranite and Leucomonzogranite in the Southern Mountain Batholith,
Southwestern Nova Scotia**

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Light-colored, chemically evolved, post-tectonic granitoid rocks (LCGR) are frequently found to be spatially associated with Sn, W, U, (+/- polymetallic) deposits in many Paleozoic fold belts of the world. In fact, LCGR's are often considered to be the progenitors in these terrains. Thus, it is important to have a well-defined system for identifying and describing these LCGR's which can be readily and meaningfully applied in regional geological mapping programs.

Traditionally, such terms as leucogranite, alaskite, leucomonzogranite and leucoadamellite have been used interchangeably to describe LCGR's of the South Mountain Batholith (SMB) of Nova Scotia. Most publications have noted the "relative absence" of mafic minerals and have summarized some of the petrographic and geochemical characteristics of these rocks, but prior to this study no definition of leucogranite has been proposed.

A classification scheme based upon the abundance of mafic minerals (i.e., biotite, chlorite replacing biotite, cordierite and garnet) has been developed for the geological mapping of the SMB. Leucogranite and leucomonzogranite are presently defined as rocks containing 0-2% and 2-6% mafic minerals, respectively. Both rock types contain appreciable amounts (generally 3-10%) of muscovite and may contain accessory andalusite, fluorite, topaz, tourmaline and opaques (sulphides). Recent geological mapping indicates that the eastern portion of the SMB contains approximately 1% leucogranite, 10% fine- to medium-

grained leucomonzogranite and 25% medium- to coarse-grained leucomonzogranite.

In this study we focus on the modes of occurrence and associated mineralization of the leucogranitic rocks. Leucogranites occur: (1) as discrete intrusive bodies (<1-5 km²) and as dykes, small plugs (<100 m) and isolated outcrops. These leucogranites are hosted primarily by leucomonzogranite and, to a lesser extent, by monzogranite and granodiorite; textures include equigranular, porphyritic, aplitic, pegmatitic and seriate. Sharp intrusive contacts with host rocks (exposed and inferred) and the rare occurrence of xenoliths of other granitoid phases indicate that these leucogranitic rocks were of magmatic origin; (2) as alteration zones (i.e., via conversion of biotite to white mica) within fine- to medium-grained leucomonzogranite bodies; textures are primarily equigranular or porphyritic and reflect the texture of the host rock; associated greisenization and/or hematization are common; leucogranite occurs throughout leucomonzogranite bodies, and also in embayments and near granite/granite or granite/metasediment contacts.

Numerous mineral occurrences/deposits (e.g., East Kemptville, Long Lake, Millet Brook) are spatially and presumably genetically associated with leucogranitic rocks. However, the apparent absence of these rocks (at the present level of erosion) at other occurrences/deposits implies that leucogranite may not always be an essential ingredient for mineralization in the SMB.