# A mineralogical and fluid inclusion study of the West Gore Sb-Au deposit, central Meguma Terrane, Nova Scotia: a possible high-level analogue for mesothermal Meguma Group lode-gold deposits

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Mineralization at the West Gore Sb-Au deposit (7158 oz. Au produced), hosted by NE-trending slates of the Halifax Formation, occurs within three, subparallel and subvertical, NW-trending fault structures. Vein fill is dominated by unstrained, bimodal quartz (coarse prismatic and fine-grained equant) and paragenetically later carbonate+chlorite and associated ore minerals occupying vugs or orthogonal fractures. The ore assemblage consists of early stibnite, locally replacing po, with associated po ± py ± arspy ± Fe-rich sph ± cpy ± native antimony. Stibnite occurs either as coarse blebs or delicate, acicular to reticulate grains intergrown with quartz and/or carbonate. Stibnite is replaced by a complex, concentrically zoned intergrowth of native Au (<1 wt. % Ag) and colloform-textured Au-Cu alloy; this assemblage is frequently accompanied by zones of carbonate ± chlorite enrichment. The latest stage of mineralization consists of Fe- and Mn-oxides and secondary Sb minerals [kermesite ($Sb_2S_2O$) and valentinite ($Sb_2O_3$)].

Fluid inclusions (quartz only; 5-15μ size) occur as (1) isolated groups or (2) planar arrays along healed microfractures. The cores of prismatic-quartz grains are generally inundated with inclusions whereas the margins are inclusion-free; hence, a probable primary or pseudo-secondary origin for the inclusions. Inclusion types are: (i) V-rich ($H_2O$), (ii) L-rich ($H_2O$), and (iii) $H_2O$-$CO_2$ ($X_{CO_2}=0.1$). While type (iii) is rare, (i) and (ii) are abundant and their mutual coexistence suggests fluid unmixing. Thermometric data (°C) are summarized as follows: (1) $T_m(CO_2)=-58.7\pm1.0$ (n=8); (2) $T_m(\text{ice})=-4.0\pm1.0$ (n=50; ca. 5-8 wt. % equiv. NaCl); (3) $T_h(CO_2)=25.4\pm0.8$ (n=4; to L) and 13.3 (n=1; to V; and (4) $T_h(H_2O)=$ca. 200-400 (n=177; to L) and 370 (n=5; to V). In addition, (1) clathrate formation indicates ca. 1 mol % dissolved $CO_2$ in type (ii) inclusions, (2) decrepitation is common between 300-400°C, (3) there is no correlation between salinity and $T_h(H_2O)$ and (4) ambient pressure of formation is estimated at 0.6 kbars (ca. 1700 m lithostratic cover).

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