
**Mineralogical and chemical characteristics of
alteration in the Afton copper-gold porphyry,
Kamloops, British Columbia**

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The Afton Cu-Au porphyry deposit near Kamloops, B.C., contains high concentrations of platinum-group elements (PGE). PGE mineralization occurs in an unusual alteration zone that developed where a picritic subvolcanic intrusion is in contact with a syenite-monzodiorite stock. The samples examined in this study are from the Afton hypogene zone, and were obtained as part of DRC Resources Corporation's deep drilling program that is exploring the economic potential for underground mining beyond the pit. Preliminary petrographic work on thirteen representative thin sections shows that the syenitic host has undergone significant hydrothermal alteration of varying intensity. The reason for the PGE enrichments in the deposit is still unknown, but is believed to be related to emplacement of the ultramafic subvolcanic intrusion. Analysis of normalized trace element concentrations in 12 mineralized samples has revealed anomalous rare-earth element concentrations. Most notable is a steady increase of the elements Dy, Y, Ho, Er, Tm, Yb, and Lu among the samples. Work in progress will determine if REE abundance correlates with alteration intensity and/or PGE grade. Additionally, the correlation of alteration intensity, REE abundance, and PGE grade with distance from the contact between the picrite and syenite-monzodiorite stock may confirm the picrite as the source of the PGE. The goal of this work is to characterize the gangue mineralogy related to the alteration so that it can be used as an exploration guide for PGE mineralization in porphyry deposits.