

# Kingston 2017

## Technical Program

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### **GE1: Geometallurgy – From Exploration to Remediation (Poster)**

**Organizers / Organiseurs:** Gema Olivo (Queen's); Tassos Grammatikopoulos (SGS)

**Room / Salle:** ARC Main Gym

**Presenter:** Shishi Chen

### **Multielement geochemical anomalies of till related to porphyry Cu deposits in southcentral British Columbia, Canada**

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The Bonaparte Lake area in south central British Columbia is less than 50 km from the Highland Valley Copper, Gibraltar, and Mount Polley, and Woodjam deposits. The area also contains several showings of Au, Cu, Mo, Ag, Zn, Pb, Ni, Cr deposits. The study area is underlain by Mesozoic rocks of Quesnel Terrane including Nicola volcanic rocks and granitic intrusions. Two phases of ice flow occurred in the Bonaparte Lake area during the last glaciation. A first phase during ice advance towards the west to southwest and a second phase generally to the south which occurred at glacial maximum. Nearly continuous cover of thick glacial sediments pose difficulty to mineral exploration in the area. Principal component analysis (PCA) is conducted to the data of aqua regia leach of clay fractions ( $< 2 \mu\text{m}$ ) of till to assess the elemental assemblages related to the porphyry-type mineralization and evaluate the mineral potential of the area. The PCA captures two element association with Cu; Cu-Au-Mo-Ag-As-Hg-Pb-Sb, accounting for 32.3% of the total Cu variance) in PC2, and Cu-Cr-V-As (accounting for 16.8% of the total Cu variance) in PC3. The interpolation maps and hot spot analysis (Getis-Ord  $G_i^*$ ) of PC2 and PC3 show that multielement anomalies occur close to buried granitic rocks. PC2 mapping also indicates that there is a potential for porphyry Cu mineralization in the areas close to the Raft Batholith and Thuya Batholith, located in northeast and central part of the study area. This study shows that the multivariate analysis is able to capture the elements associated with Cu mineralization in glacial sediments and delineate potential prospective areas.