

### **New Insights of Alteration Mineral Mapping in the Skarn-Porphyry Systems**

**Huayong Chen**<sup>1</sup>

<sup>1</sup>Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, China

The Edong ore district in southeastern Hubei Province is a famous skarn-porphyry ore deposits region in China. In recent years, mineral exploration in the deep area has been paid attention, which requires new exploration methods and approaches. In this study, the latest comprehensive research results for the alteration minerals in the Tonglvshan Cu-Fe-Au skarn deposit, Jiguanzui Cu-Au skarn deposit and Tongshankou Cu-Mo-W skarn-porphyry deposit were presented, especially based on the application of the short wave infrared spectrum (SWIR). On the basis of the assemblages of alteration minerals, paragenesis and alteration zoning, trends of the main alteration mineral SWIR features were identified, and criteria for exploration were further extracted for each skarn (-porphyry) deposit. For instance, high Pos2250 values (Pos2250>2253 nm) of Fe-rich chlorite, high crystallinity (Pos2170>2170 nm, Dep2170>0.18) of kaolinite group, anomalous high and low Pos2200 (<2202 nm, or >2212 nm) values of white mica-montmorillonite, emerging of kaolinite, dickite and saponite, can be used as vectors towards mineralization center in the Tonglvshan Cu-Fe-Au deposit; the high Pos2200 (>2209 nm) values of white mica-montmorillonite can be used as vectors for the Jiguanzui Cu-Au deposit; and the high frequency of chlorite Pos2250 (>2249 nm) and Pos2335 (> 2333nm) can be used as vectors for the Tongshankou Cu-Mo-W deposit. These research findings show that the alteration minerals can provide effective exploration indicators for the skarn-porphyry deposits in Edong district, and these results have been preliminarily applied and verified in the Tonglvshan Cu-Fe-Au deposit.