# Geochemistry and metallogeny of Shaxi -Changpushan porphyry copper (gold) deposit, East China

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The ore-forming conditions and ore-forming controlling factors in Shaxi-Changpushan porphyry copper (gold) deposit, Central Anhui Province, east China, have been fully investigated by means of series of geological and geochemical methods. The results show that liquid-vapor conditions have been documented and show that fluid inclusions frequently occur in quartz veins accompanied with gold mineralization residence in both pyrite and chalcopyrite. The ore-forming temperature is between 230-350°C.

Sulfur isotope studies show that the $\delta^{34}S$ values are between –0.20-3.0‰ for most of sulfides. The ore-forming fluids were mixtures of the magmatic fluids with meteoric water during the ore-forming processes by the results of oxygen and hydrogen isotope studies on the minerals and mineralized rocks.

Based on geochemical and the tectonic background of the southern part of Tanlu fault belt, a model of controlling ore bodies in this region by structural shielding and core parts of the regional anticline has been proposed. A possible super-large porphyry (gold) deposit has been proposed in the region.

Acknowledgments: This study is supported by funds from the Chinese Ministry of Science and Technology (G1999043204) and the Korean Foundation for Advanced Studies.

# Intrusion-hosted PGE mineralization in the Sichuan Province, China

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## Geological setting

Numerous platinum-group-element (PGE-bearing), layered, ultramafic-mafic intrusions occur in the Pan-Xi and Danba areas of the Sichuan Province of southwest China, which is located on the western margin of the Yangtze Platform, a region geologically characterized by Precambrian basement and by stable sedimentary cover sequences. The regional intrusions were emplaced during the Hercynian-Indosinian orogenies (c. 400-250 Ma) and form a NS-striking belt, approximately 500 x 30-70 km (Zhang et al., 1990). The layered intrusions are mainly composed of peridotite, pyroxenite and gabbro upwards.

## PGE mineralization

Four types of intrusion-hosted PGE mineralization have been recognized: (1) disseminated (0.2-2 g/t PGE) and massive (1-8 g/t PGE) Cu-Ni- and sulphide-rich type with PGE (Yangliuping), (2) disseminated (0.5 to 4 g/t PGE) layered, low sulphide and Cu-Ni type with PGE in complexes, also containing V-Ti-Fe mineralization at higher levels (e.g., Xinjie), (3) Disseminated (1 to >50 g/t Pt) layered, low sulphide and Cu-Ni type with metallic Pt (e.g., Shimian), and (4) disseminated (1 to 20 g/t PGE), fault-controlled, low sulphide and Cu-Ni type with PGE (e.g., Dayanzi). The former three are mainly hosted in pyroxenite as stratiform ores and the forth mainly in marble of the contact zone along pyroxenite dykes as vein ores. The intrusion at Yangliuping was strongly serpentinized, uralitized and saussuritized and its massive ores occur in the basal contact zone between the marble and intrusion. Ore minerals of the four types are dominated by pyrrhotite, pentlandite, chalcopyrite and pyrite. The PGE minerals include sperrylite ($PtAs_2$), borovskite (PdSbTe), merenskyite-moncheite $(Pd,Pt)Te_2$, and native Pt (Liang et al., 1998).

## Conclusions

The PGE mineralization in the Pan-Xi and Danba areas is associated with magmatic processes and possibly also with late- or post-magmatic hydrothermal activities. In some cases, second-order faults control the mineralization. The existing PGE deposits and prospects in the intrusions indicate that the areas have a good potential for further PGE exploration.

## References

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