

Platinum-Group Elements in Carlin-Type Gold Deposits, Southwestern China

SU WENCHAO, HU RUIZHONG and QI LIANG

Institute of Geochemistry, Chinese Academy of Sciences, Guiyang 550002, P.R.CHINA

As is well known, platinum-elements (PGEs) has long been mainly obtained as a byproduct from some magmatic deposits of Cu-Ni. The common notion that the PGEs are chemically inert and immobile under most geological conditions. However, a hydrothermal origin at low temperature was recognized for some unusual PGEs occurrences in the unconformity-related uranium deposits in Australia. The possibility of hydrothermal transport of PGEs has recently received considerable attention.

This abstract introduces the preliminary investigations of PGEs in some Carlin-type gold deposits, southwestern China.

The Carlin-type gold deposits in China are located near the margin of the Proterozoic Yangtze and Aba cratons. Submicro-sized gold is disseminated in the fractured zones of the Cambrian-Triassic microclastic and carbonate rocks, and associated with Hg, Sb, As, and Tl. These deposits share much in common with the Carlin-type gold deposits in USA in tectonic setting, lithology of host rocks, minerals, element associations and occurrence of gold.

The PGEs as platinum-gold and platiniferous-gold in pyrite and arsenopyrite have been found in the Jinya deposit by scanning electron microscope (SEM). The platinum contents in these minerals are about 5%--35%. The PGEs enrichment also have been found in other four Carlin-type gold deposits, southwestern China. The contents of PGEs in these deposits by isotope dilution inductively coupled plasma-mass spectrometry (ICP-MS) show that the (Pt+Pd) contents in primary ores are about (4—38) ppb, the pyrites associated with gold mineralization contain (12—1044) ppb of (Pt+Pd), the oxidized ores are about (77—208) ppb of (Pt+Pd). The origin of PGEs in Chinese Carlin-type gold deposits may be related to the buried basic and ultrabasic rocks.