# Relationships between porphyry Cu–Mo mineralization in the Jinshajiang–Red River metallogenic belt and tectonic activity: Constraints from zircon U–Pb and molybdenite Re–Os geochronology

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The Jinshajiang–Red River porphyry Cu–Mo metallogenic belt is an important Cenozoic porphyry Cu–Mo mineralization concentrating zone in the eastern Indo–Asian collision zone. New zircon U–Pb and molybdenite Re–Os ages and compilation of previously published ages indicate that porphyry Cu–Mo deposits in the belt did not form at the same time, i.e., the porphyry emplacement and relevant Cu–Mo mineralization ages of the Ailaoshan–Red River ore belt in south range from 36.3 Ma to 34.6 Ma, and from 36.0 Ma to 33.9 Ma, respectively, which are obviously younger than the porphyry emplacement ages of 43.8–36.9 Ma and the relevant Cu–Mo mineralization ages of 41.6–35.8 Ma of the Yulong ore belt in north. Tectonic studies indicated that the Jinshajiang fault system in north and Ailaoshan–Red River fault system in south of the Red river belt had different strike-slip patterns and ages. The right-lateral strike-slip motion of the Jinshajiang fault system initiated at ca. 43 Ma with corresponding formation of the Yulong porphyry Cu–Mo system, whereas the left-lateral strike-slip motion of the Ailaoshan–Red River fault system initiated at ca. 36 Ma with corresponding formation of the Ailaoshan–Red River porphyry Cu–Mo system. Therefore, the different ages of porphyry Cu–Mo systems, between in north and south of the Jinshajiang–Red River belt, indicate that the porphyry Cu–Mo mineralization is closely related to the divergent strike between the Jinshajiang and Ailaoshan–Red River strike-slip faulting resulted from the Indo Asian collision. The tanslithospheric Jinshajiang–Red River faulting caused partial melting of the enriched mantle sources of alkali-rich porphyries by depressurization or/and asthenospheric heating, and facilitated the migration of alkali-rich magmas and the corresponding formation of alkali-rich porphyries and relevant Cu–Mo deposits in the belt.

# The Platinum-Group Element Abundance Patterns of the Meishan Permian-Triassic Boundary, China

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It is a long-standing controversy what triggered the extinctions at the Permian-Triassic boundary, the most severe mass extinction in the geologic record (1). We analyzed all PGEs (except for Os) of a set of samples from the GSSP of the P-Tr boundary at Meishan, China. The PGE patterns have important constraints on sources of the P-Tr boundary materials. The data are also compared with previous results of known layers samples (2).

A total of 16 samples from three sections at Meishan were analyzed, which were numbered bed A to H, T, N, and bed O to S, and U. They were treated as blind testing samples, and the location information was released after the experiments. Our data reveal no significant positive PGE anomaly with the Ir contents of 0.003-0.029 ng/g. Compared with previous analyese (2), the abundance of PGEs reached the maximum at layer B-26. The layer B-25 and the pyrite lamina of B-24 (bed C and Q) that is referred to as the P-Tr event boundary, contain the lowest abundance of PGEs.

The P-Tr boundary samples show highly fractionated PGE patterns, distinct from chondrites and iron meteorites. The PGE patterns are parallel to those of Siberian flood basalts and Emeishan flood basalts, especially more similar to the former. The PGE data suggest a possible linkage between the P-Tr boundary event and the eruption of Siberian or Emeishan flood basalts.

[1] Erwin (1994) Nature 367, 231-236. [2] Xu *et al.,* (2007) Chem. Geo. 246, 55-64.

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