Ages and source differences of W-Sn-Mo and W-Cu deposits around the Maioershan-Yuechengling complex pluton, western Nanling ore belt, South China

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The Nanling metallogenic ore belt is well known for its large scale W-Sn-Be-Nb-Ta-REE mineralization associated with Yanshanian granitoids. Many deposits with different element association such as W, W-Mo, Sn-Pb-Zn and W-Cu have been found surrounding the Miaoershan-Yuechengling complex pluon with surface area of more than 3000km^2, which formed an ore rich domain surrouding the complex pluon in the west Nanling metallogenic belt, China.

The granitoids associated clossely with the Niutangjie large skarn W, the Jiepai skarn W-Cu, the Xianshui Cu-W, the Zhanggangling Sn-Pb-Zn, the Yuntoujie W-M, and the Shunhuangshan W deposits in the the ore rich domain have zircon U-Pb age of 421 ± 1.6 Ma, 428.3 ± 6.5 Ma, 431.4 ± 3.8 Ma, 420.5± 4.1 Ma，216.8 ± 4.9 Ma and 220.3± 3.6 Ma, respectively. Out new set of ages on ore related granitoids indicate that the deposits were formed during the Caledonian and the Indianian orogeny and that the Nanling ore belt underwent not only large scale Yanshanian W-Sn-Be-Nb-Ta-REE mineralization but also strong Caledonian and Indosinian granite related mineralization.

The W-Mo-Sn and W-Cu ore related intrusions in the ore rich domain are different in major element ratios and Sr-Nd isotope compostion. The former have εNd(t):-9.23 ~ -13.1, T_{2DM}: 1798~2673 Ma and are located in the field of metapelitic-derived melts on Ca/(Mg+Fe) vs Al(Mg+Fe) plot; however, the later have relatively higher εNd(t) (-7.36 ~ -8.80) than the former and were ploted in or near the field of metaigneous rock derived melts. These differences in major element ratios and εNd(t) values suggest that the W-Mo-Sn relted magmas were deived from partial meltting of metasediments and the W-Cu related magmas from partial melting of metaigneous rock plus metalsediments. The slight differences in magma sources of W-Mo-Sn and W-Cu related intrusions were suggested to be the key foctor resulting in the their related deposits with different element association.

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