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Re-Os Dating of Molybdenites and Its Geological Significance in the Jianglang Dome, SW China

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1 Geological Setting and Mineralization

The Jianglang Tectonic Dome (JTD) lies on the Songpan–Garze Orogenic Belt (SGOB), the eastern margin of the Tibetan Plateau. As a part of the SGOB, Muli-Yanyuan Foreland Thrust Zone (LYFTZ) separates it from the western of Yangtze block.

In the northern margin of the JTD, As thermal metamorphism and metasomatism, skarn was formed in the Tiechanghe granite and Permian strata boundary surface. Wulaxi W-Mo deposit occurs in the skarn. The ore type comprises skarn and quartz vein types. Both scheelite and molybdenite are dominant ore-forming minerals in the deposit.

2 Molybdenite Re-Os Dating

Nine molybdenite samples were taken for analysis from the Wulaxi W-Mo deposit in the northeastern margin of the JTD. This Re-Os isotope analysis was performed by the TJA X-series ICP-MS method at the National Research Center of Geoanalysis, Chinese Academy of Geosciences. The precise dating of molybdenite by Re-Os isotopes yields model ages between 164.0–171.4 Ma (a weighted mean age of 167.8 Ma), and an isochron age of 168.1 ± 6.4 Ma. The nearly identical model age and isochron age suggest that the analytical results are reliable.

3 Discussion

The ore-forming materials are derived from the

Tiechanghe granite. The Zircon U-Pb age of the Tiechanghe granite is 159.31 Ma (Zhou et al., 2014). The Tiechanghe granite have been proven to be mainly derived from the crust (Zhou et al., 2014), and probably originated from the partial melting of metamorphic dome basement. It indicates that the Wulaxi W-Mo deposit and the Tiechanghe granite intrusion in the northwestern of the JTD formed in the same period of time.

By comparison with the published data of the JTD, It is inferred that the Liwu Cu-rich Sulfide deposit finally fixed in this stage.

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