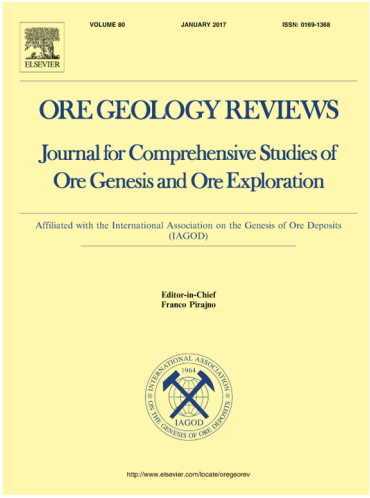

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PII: S0169-1368(17)30005-7
DOI: https://doi.org/10.1016/j.oregeorev.2017.12.014
Reference: OREGEO 2434

To appear in: *Ore Geology Reviews*

Received Date: 4 January 2017
Revised Date: 24 November 2017
Accepted Date: 11 December 2017

Please cite this article as: Q-H. Yan, H. Wang, Z-W. Qiu, X-P. Wei, P. Li, R. Dong, X-Y. Zhang, K. Zhou, Origin of Early Cretaceous A-type granite and related Sn mineralization in the Sanjiaowo deposit, eastern Guangdong, SE China and its tectonic implication, *Ore Geology Reviews* (2017), doi: https://doi.org/10.1016/j.oregeorev.2017.12.014

Origin of Early Cretaceous A-type granite and related Sn mineralization in the Sanjiaowo deposit, eastern Guangdong, SE China and its tectonic implication

Qing-He Yan[a,b], He Wang[a *], Zeng-Wang Qiu[a,b], Xiao-Peng Wei [a,b], Pei Li [a,b], Rui Dong [a,b], Xiao-Yu Zhang [a,b], Kailin Zhou [a,b]

[a] *CAS Key Laboratory of Mineralogy and Metallogeny, Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, Guangzhou 510640, China*

[b] *University of Chinese Academy of Sciences, Beijing 100049, China*

*** Corresponding author.** E-mail address: wanghe@gig.ac.cn

ABSTRACT

The recently discovered Sanjiaowo Sn deposit is located in eastern Guangdong, SE China. The Sn mineralization, hosted in granite porphyry and the Lower Jurassic Jinji Formation low-grade metamorphic wall rocks, is considered to be granite-related. Zircon U–Pb dating of the granite porphyry yielded concordant ages of 140.5 ± 1.4 Ma, which is consistent with the cassiterite U–Pb age of 139.8 ± 5.0 Ma, indicating a temporal link between the emplacement of granitic plutons and Sn mineralization. The granite porphyry samples are weakly peraluminous and show an A-type geochemical signature with high $Na_2O + K_2O$ (7.19–8.51 wt.%), REE (261–308 ppm), Zr + Nb + Ce + Y (353–476 ppm) contents, FeO^T/MgO (0.93–0.99), and Ga/Al (2.65–3.42) ratios. They display bulk rock initial $^{87}Sr/^{86}Sr$ of 0.7110 to 0.7165, εNd(t) of –5.90 to –4.04, and zircon εHf(t) values from –8.36 to –4.16 with Mesoproterozoic T_{DM2} ages for both Nd and Hf isotopes. Detailed elemental and isotopic data suggest