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论文

中缅毗邻区金腊Pb-Zn-Ag多金属矿田花岗岩锆石U-Pb定年与地球化学特征

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摘要：

位于中缅毗邻区的金腊铅锌银多金属矿田大地构造上处于保山—掸泰地块东缘，勐统—耿马—西盟元古宙—古生代被动大陆边缘活动带南段。与矿化有关的花岗岩(简称金腊花岗岩)包括老厂似斑状角闪二长花岗岩、勐林山似斑状黑云二长花岗岩和南腊碱长花岗斑岩。文中系统研究了上述岩石的主量元素、稀土元素、微量元素、成矿元素和锆石U Pb同位素年龄等特征，从构造岩浆演化的角度，探讨上述岩体之间内在联系、成因演化以及与成矿的关系：（1）在金腊花岗岩三种岩石类型中，老厂似斑状角闪二长花岗岩和勐林山似斑状黑云二长花岗岩的锆石同位素U Pb年龄皆为（45±1） Ma，形成于岩浆结晶分异早期阶段的深成环境，而南腊碱长花岗斑岩的锆石同位素U Pb年龄为（43.41±0.78） Ma，形成于岩浆结晶分异晚期阶段的浅成环境。（2）主量元素和微量元素（稀土元素和某些微量元素（Zr/Hf、Nb/Ta、Rb/Sr、Rb/Ba、K/Rb、(Rb/Yb)N 、Sr*、K*和Zr*）），结合U Pb同位素定年研究表明，本区花岗岩形成于喜马拉雅同碰撞造山成矿作用末期局部拉张构造环境，并分别代表了构造岩浆演化过程中不同演化阶段岩浆分异结晶的产物。(3)上述三类花岗岩样品皆位于S型花岗岩区，但从老厂似斑状角闪二长花岗岩，勐林山似斑状黑云二长花岗岩，到南腊碱长花岗斑岩，样品分布逐渐远离“I”型花岗岩和“S”型花岗岩的分界线，这表明自老厂似斑状角闪二长花岗岩至勐林山似斑状黑云二长花岗岩, 到南腊碱长花岗斑岩幔源组分逐渐减少。（4）相对中国花岗岩，南腊碱长花岗斑岩不仅更富集W、Cu、Bi、Sb、Mo、Sn、Ag、Pb和Au等成矿元素，而且还强烈富集F、B和As等矿化剂元素，因此，碱长花岗斑岩是最有成矿远景的岩体。

关键词： 金腊花岗岩；锆石U Pb定年；元素地球化学；Pb Zn Ag多金属矿化；中缅毗邻区

Zircon U-Pb age and geochemistry of granitoids within Jinla Pb-Zn-Ag polymetallic ore field across China and Myanmar

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Abstract:

Jinla Pb-Zn-Ag polymetallic ore field across China and Myanma, is tectonically located in the south segment of the Mengtong-Gengma-Ximeng passive continental margin of Proterozoic eraPalaeozoic era，and the eastern margin of the Baoshan.Shantai Massif. The granitoids related to mineralization within the ore field include Laochang amphibole admellite, Menglinshan biotite admellite and Nanla K-feldspar granite-porphyry. This paper systematically presents the characteristics of the major elements, REE and trace elements (including ore-forming elements) of the granites and their isotopic ages determined by zircon SHRIMP dating. The intrinsic connection and genesis of the granites, and the relationships between granites and Pb-Zn-Ag mineralization are discussed. It comes to the conclusions as follows：(1) Among three types of granites, Laochang amphibole admellite and Menglinshan biotite admellite have the same age of (45±1) Ma and likely emplaced in a deeper setting at the earlier stage of tectonomagmatic evolution; Nanla K feldspar granite porphyry has an age of (43.41±0.78) Ma and emplaced in a shallower setting at the later stage of tectonomagmatic evolution.（2）Studies on both major elements and trace elements of the granites, combined with their zircon U-Pb age, such as REE and Zr/Hf，Nb/Ta，Rb/Sr，Rb/Ba，K/Rb，(Rb/Yb)N，Sr*，K* and Zr* show that these granites emplaced in an extension tectonic environment at the age of 43~45 Ma during the later stage of syncollision of the Himalayan orogenic episode, which are the products of crystallization and differentiation from their mother granite magma at different stage of tectonomagmatic evolution. (3) It has been shown in the Al (Na+K+Ca/2) diagram that the Jinla granitoids are all plotted within the area of “S” type of granites, but the samples from Laochang amphibole admellite, Menglinshan biotite

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admellite and Nanla K-feldspar granite porphyry are scattered gradually far away from the boundary between “I” and “S” types of granites, implying that the components from the upper mantle gradually decreasing from the Laochang amphibole admellite to the Menglinshan biotite admellite and then to the Nanla K-feldspar granite porphyry. (4) In contrast to granites in China, Nanla K-feldspar granite porphyry are strongly richer in ore forming elements such as W, Cu, Bi, Sb, Mo, Sn, Ag, Pb, and Au as well as volatile elements F, B, and As than the other two types of granites. In addition to that, the Pb-Zn-Ag ore deposits are spatially associated with K-feldspar granite-porphyry veins in depth within this ore field, which implies that the K feldspar granite-porphyry may be closely related to the Pb-Zn-Ag mineralization and may be regarded as visible marks for finding new ore deposits.

Keywords:

Jinla granitoids; zircon U-Pb dating; element geochemistry; Pb-Zn-Ag mineralization; across China and Myanmar

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