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摘要:

北喜马拉雅穹窿最东部的雅拉香波穹窿发育两套高Sr/Y比值二云母花岗岩,分别形成于始新世(约43~44Ma)和中新世(约18~20Ma)。虽然在Sr-Nd同位素系统特征和形成时代上存在明显差异之外,但无论在矿物组成,还是在元素地球化学(高CaO,高Na/K和Sr/Y比值等)特征这两套花岗岩都存在高度相似性。为探讨在这两套花岗质岩浆形成和演化过程中,磷灰石的地球化学行为特征,应用LA-ICP-MS分析了磷灰石的微量元素地球化学组成。测试结果揭示(1)在这两套花岗岩中,微量元素在磷灰石与熔体之间的配分行为相似;(2)始新世二云母花岗岩中含有残留的磷灰石;(3)在同一件样品中,在磷灰石颗粒之间,存在一定程度的微量元素地球化学特征的不均一性,反映了局部熔体地球化学特征;(4)在花岗质岩浆演化过程中,富钙长石组分的斜长石的分离结晶作用,不仅导致熔体的Ca和Sr含量降低,Na含量和Eu负异常幅度增大,同时导致熔体的LREE含量升高。

英文摘要:

Recent investigations in the Yardoi gneiss dome, the easternmost one of the Northern Himalayan Gneiss Domes (NHGD), have identified two suites of high Sr/Y two-mica granites (TMG) formed at ca. 43~44 Ma and ca. 18~20 Ma, respectively. Though they differ substantially in the Sr-Nd isotope systematics and the timing of formation, they show similar characteristics in mineral assemblage as well as in element geochemistry (e.g. high CaO and Sr contents, high Na/K and Sr/Y ratios). LA-ICP-MS analyses were carried out on apatite grains from these TMGs to investigate the geochemical behavior of apatite during their magmatic evolution. Analytical results show that: (1) trace element partitioning behavior between apatite and granitic melt are similar in these TMGs; (2) the Eocene TMG contains relict apatite, probably inherited from its source; (3) relatively large scattering in trace element compositions among individual apatite grains from the same sample is due to chemical variations in local melts in equilibrium with apatite; (4) fractional crystallization of plagioclase rich in anorthite component had played a primary role in regulating the chemical compositions (e.g. Ca, Na, Sr, and LREE) of melts that crystallized apatite. Our investigation demonstrates that combined investigation of the growth textures and chemical compositions of apatite and plagioclase could yield important insights on the petrogenesis of granitoids.

关键词: [高Sr/Y花岗岩](#) [磷灰石](#) [微量元素地球化学](#) [北喜马拉雅穹窿](#) [喜马拉雅造山带](#)

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