Middle Jurassic high-pressure shearing events revealed by phengite in the Jiayuqiao metamorphic complex, Eastern Tibet

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The Jiayuqiao metamorphic complex is located in the southwest of the Bangong-Nujian suture with a width of 15-20 km and a length of more than 120 km. A detachment fault, which includes variable ductile shearing fabrics, separated the core of the Jiayuqiao metamorphic complex from the middle Jurassic cover. Phengite was first identified in the detachment fault. There are typical S-C fabrics within this fault, where the rectangle quartz ribbons form the S-foliation, and the phengites make up the C-foliation. Strain measurements for the quartz grains give K =α in Flinn diagram, indicative of a strongly sub-horizontal detachment deformation. The rectangle quartz ribbons indicate high-greenschist to low-amphibolite metamorphic grades, but the phengite EMP results point to a metamorphic grade of blueschist. The phengite was dated at 166.3 ± 1.0 Ma using the $^{40}Ar/^{39}Ar$ method. Thus this study documents a middle Jurassic high-pressure shearing tectonic event in eastern Tibetan and implies that the Bangong-Nujiang suture probably formed during middle Jurassic time.

Dating and geochemical characteristics of Yanwan paleozoic collisional intrusions in West segment of Qinling Mountains, China

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The Yanwan garnet-bearing monzonitic granite Intrusions are distributed in west segment of Northern Qinling Mts., which consist of Al-rich garnet and muscovite, belong to muscovite-bearing per-aluminous granitic series with SiO_2=73.39%~74.40%, Na_2O/K_2O<1, A/CNK=1.07~1.18, Rittman values (δ) change form 2.02 to 2.15. Moreover, Corundum normal mineral occurring in CIPW calculation indicates the Yanwan intrusions are attributed to S-type granite. REE and trace elements study of the intrusion show the chondrite-normalized REE patterns are right-inclined with $\sum$REE=121×10^{-6}~151×10^{-6}, LREE/HREE=14.91~21, and negative δEu values (δEu=0.55~0.74). According to the ORG-normalized large ion lithophile element patterns and the trace elements tectonic identification diagrams, we deduce the intrusions are derived at collisional setting and represents continental collisional geodynamic framework. LA-ICPMS of Zircon U-Pb dating of an intrusion is 414.3±1.9Ma, indicating Yanwan intrusions formed at the end period of Late-Silurian and represent the magmatic products of the orogeny in Late period of Paleozoic. Together with other evidence, it can accurately restrict the interval of Paleozoic collisional orogeny in west segment of Northern Qinling Mts., China.

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