

Geochemistry and Chronological Characteristics of Saguo Granitoids in Western Gangdise belt, Tibet, China and Its Geological Significance

DING Feng¹, LIU Shou-hang^{1,2}, GAO Jian-guo¹, LI Yue³, XU Zhong-biao⁴

(1. Chengdu University of Technology, Chengdu, Sichuan 610059, China; 2. Dazhou Administration of Work Safety, Dazhou 63500, China; 3. Remotes Sensing Center of Guanxi, Nanning 530000, China; 4. Panxi Geological Team, Xichang 615000, China)

Abstract: On the intersection between the middle of Gangdese western belt and south subzone, monzonitic granite and granodiorite-porphyry dominate in Saguo, which is often rich in Si and K and poor in Mg and Ca, with $w(\text{SiO}_2)$ ranging from 64.84% to 70.1%, $w(\text{K}_2\text{O})/w(\text{Na}_2\text{O}) = 1.21 - 1.75$, $A/\text{CNK} = 0.99 \sim 1.2$, $w(\text{Al}_2\text{O}_3)$ between 14.48% ~ 15.52%, and indicated as peraluminous rock. Total content of rare earth varies from 256.1×10^{-6} to 428.8×10^{-6} , with $\text{LREE}/\text{HREE} > 10$, showing an enrichment of LREE. The $\delta\text{Eu} = 0.77 \sim 0.85$ indicates a weak negative abnormality of Eu. The rock is characterized by an enrichment of large ion lithophile element such as Rb, Th, and K, and depletion of high field strength elements as Ba, U, and Ta. Generally, the rock presents island arc characteristics in petrology and geochemistry, and only few parts show the collisional features in granite of geochemistry, so with the evolution of granitic magma in this zone and tectonic environment, we can conclude that the granite in Saguo possibly formed in transitional environment of island arc to collision. The LA-ICP-MS zircon U-Pb age of monzonitic granite is (88.6 ± 1.5) Ma, and Saguo granitoid is the product of Neotethys ocean subducting towards north, so we can get a conclusion that the collision between Asian and Indian continent is after 88.6 Ma.

Keywords: Late Cretaceous granitoid; geochemistry; geochronology; Neo-tethys ocean