

The Characteristics and Petrogenesis of the Late Mesozoic granitoids in the eastern North China Craton

XU XUECHUN¹, CUI FANGHUA², ZHENG CHANGQING SR.³ AND LIANG CHENYUE³

¹College of Earth Sciences Jilin University

²Shandong University of Sciences and Technology

³Jilin University

Presenting Author: 1443470526@qq.com

The petrogenesis of the Late Mesozoic granitoids in eastern North China Craton remains controversial a mantle plume partial melting of the delaminated/thickened lower crust or water-fluxed crustal melting The late-Mesozoic granitic rocks in the western Liaoning Province composed of monzogranite, quartz diorite, granitic porphyry and quartz syenogranite. The granitic magma activities can be divided into three stages: Late—Jurassic(156Ma) early stage of Early-Cretaceous(139Ma) middle stage of Early-Cretaceous(130–125Ma) All of the samples are belonged to the high—K calc—alkaline series, and enriched in large ion lithophile elements(K, Pb)and depleted in high field-strength elements(Nb, Ta, Ti) which imply these rocks formed in the subduction setting. The granitoids formed during 156–139Ma with the geochemical characteristics similar to the I-type granite, have enriched $\epsilon_{\text{HF}}(t)$ (-22.70–-18.66) and ancient crustal t_{DM2} values(2387–2767Ma), which indicate the primary magma originated from the partial melting of ancient middle—upper crust The granitoids formed during 130Ma with the geochemical characteristics similar to the I—type granite too, however, have depleted $\epsilon_{\text{HF}}(t)$ (+3.64–+6.22) and Neoproterozoic crustal t_{DM1} values(537–969Ma), which indicate the primary magma originated from the partial melting of Neoproterozoic juvenile crust. The alkali A-type granite formed during 125Ma have negative $\epsilon_{\text{HF}}(t)$ (-17.30–-11.56) and ancient crustal t_{DM2} values (1917–2278Ma), which indicate the primary magma originated from the partial melting of ancient middle—lower crust. The granitoids formed during 160–139Ma have the geochemical characteristics similar to the I-type granite, high-K calc—alkaline, high Sr/Y and low Y (similar to Adakites) enriched $\epsilon_{\text{HF}}(t)$ but granitoids formed during 130–120Ma have the geochemical characteristics similar to the A—type granite, alkaline, geochemical characteristics similar to classical island arc, relatively defective $\epsilon_{\text{HF}}(t)$ with characteristic of younger forward sea. So we can confirm that the continuous subduction of paleo-Pacific plate beneath eastern North China Craton took place during 156–139Ma and the slab roll-back of the paleo—Pacific plate proceeded during 139–130Ma thereafter intense lithosphere regional extension caused by the slab roll—back of the paleo-Pacific plate occurred during 130–125 Ma. The magma source of Late Mesozoic granitoids in eastern North China Craton is form partial melting of the ancient/juvenile crust caused by the underplating of mantle magma, which formed in the condition of fluid derived from the