Abstract: The consensus on the influence that the Pacific plate has on the northeast of China has not yet been built. One of these disputes focuses on whether the Pacific plate crosses the Songliao Basin and affects the extensive Late Mesozoic volcanomagmatic activities of the Great Xing’an range (GXAR). The Shaxilate area is located in the southern part of the GXAR, which is on the western margin of the Songliao Basin. The geographic position makes the area a superior example to discuss the above-mentioned issue. Therefore, we report the geochronologic and geochemical results of the granite porphyry which is outcropped in this area and identified as Late Jurassic, and aim to provide the insight of the effects of the Pacific plate on the southern GXAR, based on these results. The zircons in the granite porphyry of the Shaxilate area are euhedral prismatic and present clear oscillatory zoning (fig. 1a), with high Th/U ratios (0.36–0.95). These characteristics indicate the zircons are from a
magmatic origin. 20 analyses of LA–ICP–MS Zircon U–Pb dating yield a weighted mean $^{207}\text{Pb} / {^{206}\text{Pb}}$ age of 136.14 ± 0.99 Ma (MSWD=0.24; fig. 1a), which manifest the granite porphyry belongs to Early Cretaceous, not Late Jurassic. The age conforms to the peak period of magmatism of the southern GXAR. Geochemically, the rock is characterized by high contents of SiO$_2$ (74.79–77.14%), Al$_2$O$_3$ (12.28–13.35%) and alkalis (K$_2$O+Na$_2$O=7.50–8.33%), and by low contents of CaO (0.18–0.55%), MgO (0.10–0.11%) and P$_2$O$_5$ (0.01–0.02%). The total REE concentrations are relatively low (112.60–126.80 ppm), with low LREE/HREE ratios (10.35–10.93) and typical negative Eu anomalies ($\delta$Eu=0.34–0.36). The rock has high concentrations of U, Th, Rb, Ba, K, and low concentrations of Nb, Ta, Sr, P, Ti, with low 10000Ga/Al ratios (2.05–2.27) and low Zr + Nb + Ce + Y contents (210.10–229.40 ppm). The geochemical characteristics and the diagram result (fig. 1b) suggest the granite porphyry is I-type granite. According to the regional researches and the diagram results (fig. 1c, 1d), the Shaxilate granite porphyry was formed in an extensional setting. However, there are different viewpoints on the formation mechanism of the southern GXAR. The dominant views are that the extensional setting is controlled by the back-arc extension caused by Pacific plate compressing subduction or the post-orogeny after the closure of Mongol–Okhotsk Ocean, respectively. We believe the formation of the granite porphyry is affected by the Mongol–Okhotsk tectonic regime, based on the following evidence. (1) Spatially, the distance between the southern GXAR and Paleo-Pacific subduction zone surpasses 1500km. In terms of subducting direction (NNW–NWW) and velocity (40–200mm/a), the Pacific plate scarcely had an influence on the Late Mesozoic volcanism and magmatism. (2) The research on direction and velocity of the Pacific plate subduction since Middle Jurassic suggests that the impact of the Pacific plate to eastern China converted from a compress-torsional effect to an extensional effect at Early Cretaceous (~95Ma);(Bao et al., 2013). (3) Tian et al. (2019) elaborated the subtle mantle structure from Japan islands to NE China, using seismic data, and found that the subducting Pacific slab has just reached the underneath of the GXAR for now.

**Key word:** I-type granite, Pacific plate, Northeast China, southern Great Xing’an Range, Mongol-Okhotsk plate

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**References**

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