



## Formation Age, Geochemical Characteristics and Geological Significance of the Early Jurassic Monzonitic Granites in Southern Lesser Xing'an Range

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**Abstracts:** In this paper, the formation age and petrogenesis of the monzonitic granites was confirmed through LA-ICP-MS zircon U-Pb dating and geochemical analysis in southern Lesser Xing'an Range. It was found that the isotopic age of monzogranite is  $188 \pm 2$  Ma and formed in the Early Jurassic. The geochemical characteristics show that the contents of Si and ALK are abundant, CaO,  $\text{Fe}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{MnO}_2$ , MgO and  $\text{P}_2\text{O}_5$  are relatively low, and  $\text{A/CNK} = 0.95 \sim 1.12$ ,  $\text{A/NK} = 1.17 \sim 1.32$ , belonging to aluminum-weakly peraluminous high potassium calc-alkaline series granite; It is enriched in the large ion lithophile elements Rb, K and high field strength elements Hf, Zr, Th, and depleted in the large ion lithophile elements Ba, Sr and high field strength elements Nb, Ta, Ti and P; The total rare earth elements ( $\Sigma\text{REE}$ ) is higher, the distribution curve shows that the light rare earth elements are more abundant than the heavy rare earth elements and is right-inclined, which shows a slight negative Eu anomalies. The geochemical characteristics of elements indicate that is characterized by I- type granite. Combined with regional research data, it is suggested that the Early Jurassic monzonitic granites from southern Lesser Xing'an Range formed under an extensional environment similar to back-arc basin which could be related to double-subductions of the Paleo-Pacific plate beneath the Eurasian continent and the Mongol-Okhotsk oceanic plate beneath the Erguna Massif, and the magmas are originated from partial melting of lower crustal materials.

**Key words:** Southern Lesser Xing'an Range, Early Jurassic, monzonitic granite, Geochemical characteristics, Tectonic setting

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### References

- London, D., Wolf, M.B., Morgan, V.I., et al., 1999. Experimental sili-catephosphate equilibria in peraluminous granitic magmas, with a case study of the alburquerque batholith at Tres Arroyos, Badajoz, Spain. *J. Petrol.*, 40: 215–240.
- Yang, Y.C., Han, S.J., Sun, D.Y., et al., 2012. Geochemical characteristics and chronology of porphyry molybdenum deposits in Xiaoxinganling-Zhangguangcailing metallogenic belt. *Acta Sinica*, 28(02): 379–390.
- Yu, J.J., Wang, F., Xu, W.L., Gao, F.H., and Pei, F.P., 2012. Early Jurassic mafic magmatism in the Lesser Xing'an-Zhangguangcai Range, NE China, and its tectonic implications: Constraints from zircon U-Pb chronology and geochemistry. *Lithos*, 142–143: 256–266.

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