

## **Proterozoic rapakivi granites from North Qaidam orogen, NW China and their implications for its basement attribution**

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Proterozoic rapakivi granites commonly occur in a great volume in old cratons. Recently, Proterozoic rapakivi granites have been recognized from the Paleozoic North Qaidam Orogen, NW China. SHRIMP zircon U–Pb dating for these granites yields an age of  $1778 \pm 17$  Ma. These granites with typical rapakivi textures are characteristics of A-type granite with high  $\text{FeO}_t/(\text{FeO}_t+\text{MgO})$  and  $\text{Ga}/\text{Al}$  ratios, and high  $\text{Na}_2\text{O}+\text{K}_2\text{O}$  and rare earth element contents. They have whole-rock  $\epsilon_{\text{Nd}}(t)$  values of  $-6.09$  to  $-5.74$ , and zircon  $\epsilon_{\text{Hf}}(t)$  values of  $-9.4$  to  $-2.8$ , suggesting that they were mainly derived from old continental crust. The age, rapakivi texture and geochemical features indicate that these rapakivi granites are very close to the typical Proterozoic ( $\sim 1700$  Ma) rapakivi granites within the North China Craton (NCC) and belong to the group of Proterozoic rapakivi granites of the northern hemisphere. Therefore, the recognition of these rapakivi granites from the Paleozoic North Qaidam Orogen has great significances. This is first case of identification of Proterozoic ( $\sim 1700$  Ma) rapakivi granites from Phanerozoic orogens. These rapakivi granites may originally occur in an old craton similar to the NCC, and then they, together with a part of the craton, were involved in this orogen. The similarity of these Proterozoic rapakivi granites to those in the NCC provides evidence that part of the basement of the North Qaidam orogen were similar to that of the NCC or probably derived from the NCC.

**Key words:** Rapakivi granites; Craton; Proterozoic; North Qaidam orogen