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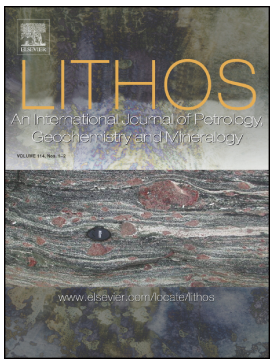

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In situ U-Pb zircon dating of Devonian sandstones and Paleoproterozoic gneissic granites in the Imjingang Belt: tectonic implications for the Korean Peninsula and North China

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Abstract

The Imjingang Belt in the Korean Peninsula (KP) attracts much attention because of its critical position in determining the tectonic affiliation of the peninsula. The key to clarifying current controversy lies in the understudied Archaean–Proterozoic basement rocks and Devonian-Carboniferous sedimentary series (i.e., Imjin Group) in the North Korean part of the belt. In this study, we present geochronological study on magmatic zircons in three Paleoproterozoic gneissic granites and detrital zircons in four clastic rocks of the Imjin Group. SIMS U-Pb zircon analyses on the former reveal that three gneissic granites formed at 1884 ± 10 Ma, 1875 ± 10 Ma and 1885 ± 10 Ma, respectively. They are reminiscent of similarly aged granitic magmatism from the North China Craton (NCC) and in the Nangrim, Gyeonggi and Yeongnam massifs of the KP, thus defining a consistent Paleoproterozoic granitic magmatic event across the NCC and the KP. Detrital zircons from the Puap Formation of the Imjin Group yield age populations of 2.5-2.3 Ga