GEOLOGICAL SETTING OF HIGHLAND COMPLEX (HC), SRI LANKA

Given that most UHT studies mainly focus on the pressure-temperature condition of the rocks, the geochemical data from UHT granulites, especially the trace elements, are limited and poorly constrained. To provide a more robust geochemical characteristic of UHT granulites, we analyzed the bulk compositions of several UHT granulites from Sri Lanka as well as those from North China Craton. Here, we will introduce the geological setting of Sri Lanka.

Based on the subdivision by Kröner et al. (1991) and Cooray (1994), the metamorphic basement of Sri Lanka can be subdivided into four complexes, with the Vijayan Complex in the east, the Highland Complex in the middle, and the Wanni Complex and Kadugannawa Complex in the west. Among these complexes, the Vijayan Complex is dominated by amphibolite facies metamorphic rocks, the Highland Complex by granulite facies rocks, while the Wanni Complex and Kadugannawa Complex by upper amphibolite to granulite facies metamorphic rocks. The UHT rocks mainly outcrop in the central part the Highland Complex, with a minor outcropping in the southwestern part (Sandiford et al., 1988; Kriegsman and Schumacher, 1999; Sajeev and Osanai, 2004; Osanai et al., 2006). They are interlayered metasedimentary rocks containing metamorphic pelite, semi-pelite, and psammite (Osanai et al., 2006).

The UHT rocks in Highland Complex record clockwise *P–T* paths. The estimated peak conditions of these rocks range from pressure of 0.6–1.8 GPa and temperature of 800–1150 °C (e.g. Raase and Schenk, 1994; Osanai et al., 2006;

Sajeev et al., 2010; Dharmapriya et al., 2014). Metamorphic zircon in the UHT rocks recorded a wide age range of 660–520 Ma (Osanai et al., 2016; He et al., 2018; Kitano et al., 2018), which was interpreted as a long-lived, high-grade metamorphism (He et al., 2018). Leucosomes within the UHT rocks and charnockite could be recognized in the field, indicating significant anatectic melting and melt loss (Raase and Schenk, 1994). Six UHT samples were collected from the western Highland Complex (Figure S4). The geochemical data are listed in Table S3 and complied in Figures 5 and 10.

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