Migmatites and granulites from the Foping Dome (Qinling Orogen, east-central China) and the Sino-Korea – Yangtze collision

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In east-central China's multi-stage Qinling-Dabie Orogen, (U)HT metamorphics formed in four periods that encompass variable plate-tectonic settings. Among other localities in the orogen's western part, the youngest and least-studied migmatites and granulites crop out in the Foping Dome addressed in this communication by thermodynamic modelling, conventional thermobarometry, and U/Pb zircon dating. The data reveal the rocks' PT path and deepen the knowledge of the orogen's evolution.

In the Foping Dome, granulites (Di-Grt-Pl-Kfs-Bt-Amp-Qtz) occur as stratiform layers and boudins in felsic migmatite (Grt-Pl-Kfs-Bt-Qtz). Peak metamorphic conditions could not be obtained from the granulites given a severe retrogression, which widely destroyed clinopyroxenes and reequilibrated garnet. For two migmatites, garnet isopleth thermobarometry and phase equilibria modelling estimates peak metamorphic conditions of 819 °C, 1.02 GPa and 833 °C, 0.93 GPa; these pressures and temperatures are a bit higher than values previously estimated from Opx-Cpx-Pl-Qtz equilibria [1]. For the retrogression of the granulites, conventional methods calculate 515-550 °C, 0.7 GPa. LA-ICPMS analysis of non-luminescent zircon rims yields a series of concordant ages of 250-193 Ma.

Evolved along a clockwise PT-path, the Foping Dome HT metamorphics are genetically related to the early Mesozoic collision of the Sino Korean and the Yangtze Craton: In the timeframe given by the zircon ages, UHP eclogites in the Dabie Shan (~ 244-220 Ma [2]) indicating proceeding subduction formed and syn-collisional granitoids intruded (207-201 Ma [3]); the youngest grains are a bit older than the post-collisional (~ 190 Ma) magmatism [3]. The youngest zircon ages might reflect cooling and beginning of the post-orogenic collapse.

[1] Wei et al. (1998) *Chin. Sci. Bul.* **43**, 1358-1362. [2] Hacker et al. (2006) *Tectonics* **25**, TC5006. [3] Dong et al. (2012) J. *Asian Earth Sci.* **41**, 213-237.