

**EXHUMATION *P-T* PATH OF UHP ECLOGITES IN THE HONG'AN AREA,
WESTERN DABIE MOUNTAINS, CHINA**

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Four generations of mineral assemblages have been identified in ultrahigh-pressure (UHP) eclogites from the Hong'an area, recording four metamorphic stages of the exhumation trajectory, i.e. garnet + omphacite + kyanite + zoisite / epidote + rutile + coesite formed at the UHP stage, garnet + omphacite + paragonite + phengite + amphibole + epidote + quartz at the high-pressure (HP) eclogitic stage, amphibole + epidote + albite-oligoclase + paragonite + quartz at the epidote-amphibolite facies (EA) stage, and actinolite + albite and pumpellyite + albite + K-feldspar + muscovite + chlorite + margarite + epidote + quartz at the greenschist facies (GS) stage. The following *P-T* conditions were estimated for these mineral assemblages: 480 to 560 °C / 2.5 to 2.9 GPa with median values of 520 °C / 2.8 GPa at UHP stage, 575 to 685 °C / 1.6 to 1.9 GPa with the average results of 634 ± 27 °C / 1.8 ± 0.6 GPa at the HP stage, 500 to 640 °C / 0.4 to 1 GPa at the EA stage and 160 to 320 °C / 0.2 to 0.8 GPa at the GS stage. Garnet formed at the UHP stage was overgrown by atoll garnet at the HP stage. X-ray images, mineral compositions and compositional profiles indicate that the UHP garnet experienced re-equilibrium of Fe²⁺-Mg exchange with the early omphacite prior to the overgrowth of atoll HP garnet. A diffusion zone was also observed between the UHP and HP garnets. The Hong'an UHP eclogites experienced a temperature increase of over 100 °C from the UHP to HP stages and continued to exhume from the HP to EA stages through a process of approximately isothermal depression, which was followed by a dramatic temperature decrease from the EA to GS stages. In the process of exhumation, UHP eclogites witnessed a series of events involving fluid influx, resulting in the formation of hydrous minerals at different stages. The nature of fluids changed from K-rich at the HP stage to K-poor at the EA stage and then K-rich again at the GS stage.