HIGH PRESSURE METAMORPHISM AND RAPID DECOMPRESSION OF METABASITES: EVIDENCES OF EARLY PROTEROZOIC CONTOINENTAL COLLISION IN THE NORTH CHINA CRATON.

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High-pressure(HP) metabasites are widely distributed as enclaves and sheet like blocks in highly deformed and reworked Archaean tonalitic gneisses in Sanggan area, North China craton. Here, 4 typical types of HP rocks are investigated.1)HP granulites. Garnet interior have high Ca (XCa=0.34), and Cpx inclusion contain high Al2O3 of up to 7.8wt%. Together with Pl and Qtz inclusions, HP metamorphic condition of 820? and 13~15kbar has been obtained. The Pl ? Opx ? Hb symplectite arround garnet reveals the subsequent decompression in the condition of 750? and 8~10kbar. 2)Garnet pyroxenite. Garnet interior contain high Ca and Mg (XCa=0.30, XMg=0.38). Cpx inclusions in Grt contain high Al2O3 of up to 11wt%. Symplectites arround garnet, two stage metamorphic conditions and PT paths of the rock are similar with HP granulite.3)HP amphibolites contain Grt-Cpx-Hb-Pl-Qtz. Metamorphic conditions of 700? and 11~13kbar have been calculated.4)Retrograde eclogites are associated with HP amphibolites. Overall composition of the Cpx(50%)-Pl(An25)(50%) intergrowth is correspond to omphacite with 25 jadeite, indicating the metamorphic pressure is 12~15kbar in about 700?. Garnet display growth zones with bell shape pattern. Arround garnet, symplectites of Pl+Hb and/or Pl+Opx?Cpx developed in about 780? and ~9kbar. Garnet growth zones are still well preserved in this condition, which strongly suggest a rapid decompression after HP metamorphism.The distribution of the HP metabasites define a structure zone named Sanggan structure zone. It was once considered to be part of the so called central continental arc zone in North China craton. However, well evidenced high metamorphic pressure and rapid decompression indicate that the belt is likely to be a continental collisional zone in late Archaean or early Proterozoic.