

# **SHRIMP ZIRCONS U-PB DATA FROM ECLOGITE AND GNEISSIC GRANITE IN THE BIXILING AREA(EASTERN DABIE): GEOCHRONOLOGICAL EVIDENCE OF MULTIPHASE GEOLOGICAL EVOLUTION**

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The paper reports the SHRIMP zircon data of a dark colored eclogite and a post-eclogite garnet-bearing gneissic granite at Bixiling area. The famous Bixiling eclogite is generally known as the largest eclogitic outcrop in the world and an UHP metamorphosed ultramafic-mafic rock association. New field evidence suggests that the eclogitic rocks consist mostly of light colored eclogite and related rocks (e.g. jadeite quartzite, Ky-bearing eclogite, etc.), and subordinately of dark colored eclogite and also garnet-peridotite. The light eclogitic rocks are meta-clastics and the dark, meta-basic tuff and lava. Both are intruded by the granite (Cheng et al, 1999). The zircons from both samples are 0.25-0.3 mm in size, mostly anhedral to prismatic, and usually exhibiting a double-layered texture clearly shown in the CL images. The zircons from the eclogite are composed of a main high CL inner part, of which, some clearly show the internal oscillatory zoning pattern that is often seen in magmatic zircons, and a low CL peripheral zone related to late overgrowth and/or resorption (or other mineral transformations). Overgrowth patterns of radial sector zoning and planar growth banding are also observed in a few grains. The <sup>206</sup>Pb/<sup>238</sup>U ages of the inner parts range from 403-757 Ma, with the majority of 569-757 Ma. Two analyses of a zircon of radial sector zoning pattern give the ages of 403 and 427 Ma. The peripheral zones of the zircons define two age groups of 318-494 Ma and 214-228 Ma respectively, and the latter weighted average at 223 ± 2.5 Ma. Similarly, the low CL peripheral zones of zircons from the granite are dated at 219 ± 3 Ma. Two kinds of inner parts of the granite zircons are recognized, including the rhythmic ones of 678-727 Ma, and some strongly disrupted rhythm-free cores (not yet measured). It suggests a multiphase geological evolution of the area from the above data. (1) The volcanic protolith of the dark colored eclogite is Newproterozoic. (2) The granite was probably intruded during the Newproterozoic time as indicated by the rhythmic zircons. Hence, the UHP metamorphism is also possibly considered to be a Newproterozoic event, and more likely shortly after the volcanic activity. (3) The peripheral zones of the zircons from the eclogite and the granite are dated at 223 ± 2.5 Ma and 219 ± 3 Ma respectively, which are identical within analytical error. It might be an UHP metamorphic age, only if the UHP metamorphism was contemporaneous with the granite emplacement. Alternatively, it possibly represents an exhumation event of the area. (4) A group of Paleozoic ages is also obtained either from the inner parts or outer zones of the zircons from the eclogite, its geological significance is still unclear.