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Nuichua complex (Nothern Vietnam) as indicator of Permian-Triassic large igneous province

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Widespread in Northern Vietnam complex Nui Chua consists of layered large lherzolite-vehrlite-troctolite-gabbronorite intrusions and some small monzodiorite or monzogabbro bodies. These rocks were studied at western contact of Nui Chua intrusion. The Nui Chua intrusion, the largest (55 km2) and most representative massif of layered peridotite-gabbro intrusions in North Vietnam, is localized in the south of the Phu Ngu structure composed of Paleozoic deposits.

Our investigations reveal genetic relation between layered intrusions and small monzodiorite or monzogabbro bodies and allow joining all of these rocks into common Permian-Triassic assemblages. In that case monzodiorites or monzogabbros are the result of residual liquid crystallization during basalt melt fractionation in intermediate chamber.

The layered rock series of the Nui Chua intrusion, particularly at deep levels, is certainly productive as to sulfide and low-sulfide PGE-Cu-Ni mineralization. The products of the late stage of its formation, including the pegmatoid rocks (derivates of residual melts), are rich in Ti and V. In the eastern block of the Nui Chua intrusion (Cay Cham deposit), these rocks bear titanomagnetite-ilmenite mineralization. In our opinion, it is highly topical to estimate the V productivity of this mineralization. The ore potential of the Nui Chua intrusion might be still higher in view of the fractionation of parental melts in large deeper-seated intermediate chambers.

U-Pb data of zircon from monzodiorite (Shon Dau massif) show 250.4±2.0 Ma, from Nui Chua layered gabbronorite – 251 ± 3.4 Ma. Thus layered rocks of Nui Chua complex display the same age as monzodiorite. Age data is evidence of similar age of these intrusions, which were formed on late stage of evolution of Emeishan LIP (Chang Jiang platform). Its allow to show that layered intrusions of Nui Chua and assosiated monzonitoids were formed as derivates of Emeishan mantle plume, which was on southern part of China craton and its southern folded frame (north Vietnam sistem) in Perm-Triassic time. Thus, the Nui Chua intrusion, like the Nui Chua complex as a whole, can be considered a product of the Permo-Triassic within-plate magmatism in North Vietnam.

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