The South China tectonic block (SCB) is bounded to the north by the Qinling-Dabie orogenic belt, and to the west and southwest by the Tibetan and Indochina blocks. The late Paleozoic layered mafic rocks (diabase and basalt) the SCB are cropped out in the southwest region (western Guangxi province) of the block, also called as Guixi, a special transitional zone where influenced by the eastern Paleo-Tethyan tectonic regime in the early Paleozoic to being influenced by the paleo-Pacific tectonic regime in the late Mesozoic. Meantime, the Guixi also roughly located at the outer zone of Ermeishan Large Igneous Province (LIP) (Fan et al., 2008). Specially, economically significant gold mineralizations in Guixi are genetically associated with mafic intrusives. However, the causes of magmatism and related gold deposit tectonic background in Guixi during the late Paleozoic to early Mesozoic are strongly contested. Two drivers have proposed: influenced by the Paleo-Tethyan oceanic plate subduction or Emeishan mantle plume.

This paper present the new major and trace element data of Guixi ore-bearing and barren mafic rocks with previous published data, detailed discuss the geochemical characteristics of the bulk of mafic rocks and their petrogenesis.

Fig. 1. Geological map of Guixi (western Guangxi) with showing the Permian mafic intrusive (from Fan et al., 2008).

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298
2 Result

The samples analyzed show a wide range of trace element concentrations, however, base on the trace element patterns. All samples subdivided two groups, Group 1, samples are mainly from Shija, Longchuan and Bama, is characterized by a light-REE enriched and primitive mantle normalized trace element pattern similar to that of ocean island basalt (OIB), indicating they were derived from a geochemical enriched mantle (Fig. 2). Meantime, these samples were distributed in the north part of Guixi. Group 2, samples are mainly from Jingxi, Chunzuo and Napo, is characterized by a light-REE enriched pattern similar to that of E-MORB, but primitive mantle normalized trace element pattern display the Nb and Ta depletion, which indicating they were derived from a geochemical mixing enriched mantle with subduction influenced mantle (Fig. 3). Moreover, these samples were distributed in the south part of Guixi.

To summary, all samples are ranged from calc-alkaline arc basalt-like to tholeiitic enriched mid-ocean ridge basalt (E-MORB)-like and alkaline ocean island basalt (OIB)-like. Their trace element concentration patterns range from depleted to enriched, especially Ti, Nb and Ta from depleted arc-like to enriched OIB like, indicating a subduction-influenced to plume origin. Owing to the Guixi located in the outer zone of Emeishan flood-basalt province, we suggest the ore forming events and related magmatism were probably related to the Paleo-Tethyan oceanic plate subduction interaction with Emeishan mantle plume.

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