Being the most important centralized region of Carlin-type deposits in China, the southwest of Guizhou province is well known for its abundant gold resources, there are some large ore deposits and super-large ore deposits are under mining, such as Shuiyindong and Lannigou. Although the exploration work and the research work started since the 70’s, recent work shows a good mining prospect. Multiphase magma activities from Devonian to Late Triassic existed in study area and some magmatic rock exposed to Baiceng area etc. on a small scale. Late Yanshanian magmatic activities which in the Youjiang fold belt were relate to large-scale Sn, W, Ag, Cu, Pb, Zn ore deposits, whether have relationship with gold deposits are still unsolved. According to the previous studies, the emplacement age of ultramafic rock in Baiceng was Yanshanian and the mineralization age of Carlin-Type deposits in the southwest of Guizhou province was from 142Ma to 85.5Ma, so we can infer that the ultramafic rock and mineralization of gold have some connection. In this research, we systematically test 11 ultramafic rock samples, include major elements test, minor elements test, trace elements test and PGE test. The points of our understanding as followed:

1. The major element test result shows that the ultramafic rock enriched in Ca, Al, Mg, Fe, the content of SiO₂ is 35.59% in average and the highest is only 36.74%. The feature of high sodium and low potassium can point out because of the ratio of Na₂O/K₂O(0.09%~0.15%). According to the TAS and AFM figures, we conclude that the ultramafic rock in this research belongs to calc-alkaline ultramafic rock.

2. The chemical composition of the magmatic rock can be affected by many factors include source characteristics, partial melting degree, hypogene and hypabyssal processes (crustal contamination, crystallization and differentiation, hydrothermal alteration) etc. The enrichment of LILE (Rb, Sr) indicate that the source of magma is mantle, and the property of mantle is mafic because of the ratio of m/f(0.95 in average) and mantle-normalized PGE pattern. In the process of partial melting, LILE are easy to migrate by entering the fluid phase, therefore the more LILE enrich, the lower degree partial melting is. What’s more, the ratio of Pd/Ir(18.49) in ultramafic rock is significantly higher than that in primitive mantle, it provides another evidence of low degree partial melting. On the basis of minor elements content, especially the enrichment of strontium and neodymium and there is no covariant connection between Nb/U and SiO₂, suggest that no crustal contamination during the rising stage of magma.

3. Understand the processes of rock formation is the most important step when study the evolution of magma. The content of magnesium oxide in Baiceng ultramafic rock samples have some extent covariant relationship with silicon dioxide, it is imply that crystallization and differentiation exist during the evolution of magma. There is no separation of plagioclase because of the enrichment of strontium. Moreover, during the diagenetic process, transition elements have a function to indicate the evolution process, nickel mainly occurs in olivine, chromium mainly occurs both in clinopyroxene and garnet, vanadium mainly occurs in magnetite, clinopyroxene and amphibole. The test result shows the depletion of chromium and nickel, this means that the diagenetic process experienced a differentiation of olivine and clinopyroxene.

4. The ultramafic magmatic activities in Baiceng around 84Ma is a part of magmatic activities in late Yanshanian(80 ~ 90Ma), west South China. Late
Yanshanian magmatic activities which in the Youjiang fold belt were relate to large-scale Sn, W, Ag, Cu, Pb, Zn ore deposits, whether have relationship with gold deposits still need more chronology data form more mineral deposits. The author strongly believes that late gold mineralization of Carlin deposits in this study area have relationship with this ultramafic rock.

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Keywords: Carlin-Type deposit, ultramafic rocks, geochemical characteristics, Southwest of Guizhou Province

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