Northeast Hunan is one of the Hunan copper-gold polymetallic metallogenic belt. Many geological explorations have been carried out by Hunan Geological Prospecting Units in this region. And Qibaoshan, Jingchong copper-polymetallic deposit, Huangjindong gold deposit, Longwangpai tungsten and molybdenum polymetallic ore deposit have been found and identified. Moreover, these ore deposits received great attentions and profound studies (LIU Gouqun et al, 1999, 2000; HU Xiangzhao, 2000; WU Guangying et al, 2001; JIA Dacheng et al, 2002; FU Gonggu et al, 2002; Xiao Yongjun et al, 2004; MAO Jingwen et al, 2004; HE Zhuanli et al, 2004), The main achievement is that the close relationship between Yanshanian granites and ore deposits has been proved. However, previous works mainly focused on surface or within 300m of underground. In the recent years, the geological prospecting in this region, especially in the deep prospecting, has little progress due to various reasons.

Changchong ore deposits of Liuyang city, located in the southern part of prospecting area of the northeast Hunan. The strata are mainly Lengjiaxi ultramarine gray, gray-green medium-thick-bedded metamorphic sandstone, fine sandstone and silty slate (TANG Xiaoshan, 1989). There are 28 granodiorite porphyry dykes, with length of 100 - 300m, width of 0.5 - 5.0m, which generally toward the north.
or north-west to the east and have closer relationships with structure. The major rock-forming minerals of the granodiorite porphyry are quartz, feldspar and sericite, with 10% phenocrysts of quartz. These dykes are mostly strongly altered and mineralized. Alterations of the ore deposit mainly consist of silicification, sericification, pyritification and various degrees copper and gold mineralization. A concealed granite occur below 600-900m according to the geophysical results. Comprehensive data suggests that there may be deep-seated concealed granite body and ore deposit, and has good ore prospecting, which was verified by drilling ZK1601 through Hulan Provincial Geological Prospecting Bureau 402 team in 2008. The drill hole depth is 810.4m, and the hidden granite and Cu, Pb, Zn, Monimeralization found in 709.5m.

Our studies indicate that the major lithology of the batholiths fine-grained porphyritic biotite monzogranite, groundmass minerals range from 0.2 to 3mm in size, and with major rock-forming minerals of 42% microperthite, 28% plagioclase, 26% quartz, 4% biotite and accessory minerals of zircon, apatite, rutile, magnetite.

One of the key issues in the prospecting area needs to solve is to find out the hidden granite formation age. This paper selected a granite core in ZK1601 in 862m, weight 1.8kg. Under microscope, the sample is fresh, no deformation and weak alteration. Zircon crystals were short columnar, light brown, transparent-translucent, and ≥ 0.20mm, crystal surface mainly by {100} and {311} development completely, partial {311} and {100} development completely, {110} are not fully developed. In the CL image, growth zoning is clear, and usually in the form of wide band (Fig. 1).

Zircon identification and selected by the Hunan Institute of geological survey of rock testing center. The sample is first crushed sample to 50 mesh, using artificial method of conventional washing placer mineral, then in the binocular microscope selected no fracture, no inclusions, clear and transparent, crystal intact zircon 150. Samples were carried out at ion probe center in Beijing. With epoxy resin of zircon and RSES (Australian National University Earth Science Research Institute) standard zircon TEM (417Ma) on the glass plate. Target preparation see references (Song Biao, et al, 2002; Liu Dunyi et al, 2003). Then the zircons were photographed by optical microscopy, and cathodoluminescence (CL) images (Fig. 1), so that a detailed understanding of structure features of zircon, to distinguish different genesis of zircon. Based on repeated contrast examination zircon photo, zoning clear, no inclusions and no broken zircon grains were choosen. U-Th-Pb analyses were performed using the SHRIMP II ion microprobe at the Beijing SHRIMP Centre, Chinese Academy of Geological Sciences. Analytical procedures follow those of SONG Biao et al (2002) and LIU Dunyi et al (2003). The data were processed and assessed using the software programs Isoplot (Ludwig, 2004). Common Pb correction was made using the measured 204Pb. Uncertainties for each analysis are at 1σ, where the weighted mean age is quoted at 2σ. The SHRIMP U-Pb age is 171±3Ma, indicating the batholith was generated in late Jurassic.

The current data indicate that the studied area has undergone strong tectonic magmatic activity, at least 4 periods of Wuling, Caledonian, Indosinian, Yanshanian (JIA Baohua et al, 2004). Among these, Zhangfang batholith with zircon SHRIMP U-Pb age of 817±7Ma (not published) and Zhangbangyuan batholith with zircon SHRIMP U-Pb age of 816±4.1Ma (MA Tiequi et al, 2009) are Wuling period batholiths. Caledonian banshanpu batholith has zircon SHRIMP U-Pb age of 396±6Ma (not published). Indosinian Changshoujie batholith has zircon SHRIMP U-Pb age of 233±6Ma (not published). Yanshanian Xiaomoshan and Shihama batholiths with zircon SHRIMP U-Pb age of 122.5±2.1Ma (MA Tiequi et al, 2010) and 157±2Ma (YAO Yujun et al, 2012) respectively. Chengchong hidden granite zircon SHRIMP U-Pb age is 171±3Ma.

Generally, the Nanling region is Chinese important nonferrous, rare metal deposit prospecting area (XIAO Qinghui, 2002) where mineralization is mainly related with Yanshanian granite (HUA Renmin et al, 1999; MAO Jingwen et al, 2004). The SHRIMP U-Pb age of Chengchong hidden granite is 171±3Ma, indicating the batholith was generated in late Jurassic, and has similar geological background as other Nanling mining area. Cheng Chong mine surface exposed a little granite porphyry, diabase dikes, lamprophyre, Cu, Pb, Zn, Au, As, Sb anomalies and geophysical anomaly is obvious, and local see gold, copper, lead and zinc mineralization, suggesting that this area had experienced strong magmatic activity and mineralization, showing good prospecting.