LA ICP-MS U-Pb dating for zircon from gold-bearing quartz veins of Shihu gold deposit in north Taihang orogenic belt, North China Craton

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In order to obtain accurate metallogenic age of Shihu gold deposit which is the capital gold deposit in north Taihang orogenic belt in the North China Craton (NNC), in this study, zircons were processed from gold-bearing quartz veins (QV). LA-ICP-MS U-Pb isotope (Fig. 1) of zircon was analyzed in China University of Geosciences.

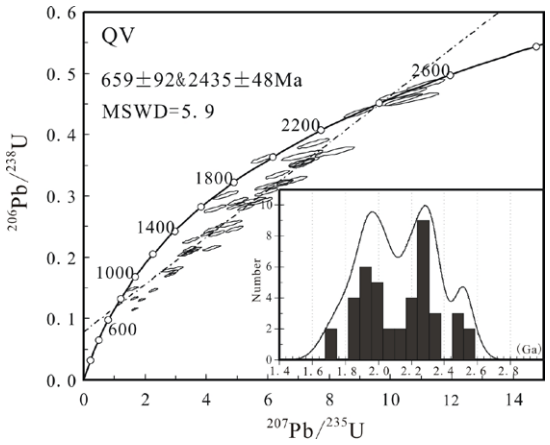

Figure 1: U-Pb concordia diagram for zircon from Shihu gold-bearing quartz vein, north Taihang orogenic belt

Shihu gold deposit was dually controlled by Precambrian basement and the Mesozoic magmatism. Ages of the zircons from gold-bearing quartz veins are similar to age of host rock. It is suggest that the zircons were from fragments of host rock captured in hydrothermal activity aroused by Mesozoic magmatism. Au may be released from ancient metamorphic rocks [1, 2] and mantle that participated in crustal-mantle interaction [2] in destruction of North China Craton in Mesozoic era.

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A kinetic model for hydrate precipitated from venting methane gas at seep site: Application to the southern summit of Hydrate Ridge, Cascadia margin off Oregon

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Gas seeps widely occurred on seafloor and gas hydrates crystallized from this venting gas in the subsurface of continental slope where temperature and pressure is suitable for hydrate formation. Hydrate Ridge is a tipical site of venting gas precipitated hydrate. The results of ODP site 1249 at southern summit of the Hydrate Ridge show that the high cotent of methane hydrate (~40%) occurred in the uppermost 20 mbsf and chloride of pore water reached more than 1300 M (Trehu *et al*. (2003, 2004)).

We developed a kinetic model for gas hydrate crystallized from venting methane gas, and then use it to simulate hydrate crystalliztion at the southern summit of the Hydrate Ridge. In our model consider fluid convection, salt-removing, ion diffusion, heat conduction and the latent heat of hydrate crystallization. And we set the initial chloride as ambient seawater value (0.558 M), initial thermal gradient as 53 ºC/km at ODP site 1247, where the hydrate content is lower and chloride reachs nearly seawater value, and gas vent rate at seafloor as steady as 1.9 kg/m^2-yr (Torres *et al*., 2002). The seafloor temperature is 4.3 °C, measured at ODP1249 seafloor (Trehu *et al*. (2003, 2004)).

To match the measured chloride, hydrate content, and temperature profiles at ODP 1249, the vent gas precipitated as hydrate in the subsurface at southern Hydrate Ridge summit only needs ~630 yr and the water flux less than 5 kg/m^2-yr. Within the ~630 years of hydrate formation, the latent heat of hydrate crystallization could increase temperature ~0.9 °C at ~20 mbsf and ~0.22 °C at ~100 mbsf, that lead to a ~5m elevation of the base of hydrate stability zone.

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