Geochronology of ore-bearing andesite in the Kuoerzhenkuola Au deposit, Northern Xinjiang, China

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The Sawur gold belt is in the northern Xinjiang, China, which belongs to the central south region of the Central Asian Orogenic Belt. The Kuoerzhenkuola gold deposit is the largest epithermal gold deposit in this belt, which is spatially associated with andesite.

Zircon La-ICPMS U-Pb age of ore-bearing andesite

we picked the ore-bearing andesite in the deposit district by detailed sampling. Furthermore, we tested the zircon U-Pb age of andesite is 339.4±4.8 Ma (MSWD=0.73) by La-ICPMS in Hefei University of Technology. The Kuoerzhenkuola Au-bearing andesite was intruded in Early Carboniferous Epoch.

The zircon U-Pb age of the mineralized andesite (339.4±4.8 Ma) is similar to the mineralization age (332±2.02 Ma) in Kuoerzhenkuola Au deposit within error [1],which indicate that Kuoerzhenkuola Au mineralization was genetically related to the andesitic magma [2]. In Eastern Sawur area, there several Au deposits aere are found through current exploration, including Berkesidai, Heishantou and Tasite Au deposits [3][4]. This geochronological result affords credit evidence to genetic research of the Early Carboniferous Au mineralization in the regional area.

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Plutonium Immobilization and Re-mobilization by soil mineral-organic matter matrix compounds in the Far-field of the Savannah River Site (SRS), USA

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Pu is believed to be essentially immobile due to its low solubility and high particle reactivity to mineral phase or soil organic matter. For example, in sediments collected from a region of SRS, close to a wetland and a groundwater plume, ^{239,240}Pu concentrations correlated with organic carbon contents. However, previous studies reported Pu can be transported several kilometers in surface water systems through wind/water interactions [2,3]. The role of natural organic matter (NOM) in immobilizing or re-mobilizing Pu thus has been demonstrated. It was found that partitioining coefficients (K_ds) of intact humic acids (HAs) were sigificantly higher than those were treated with HF, lowering chelating sites for Pu or hydrophobicity differences between the two types HAs. K_ds of Pu (IV) with HAs were higher at low pH (4.4) than those at high pH (7.1), in contrast to the observation of Pu sorption to most mineral phases [4], possibly caused by the increased solubility of HA under more alkaline conditions. Though the colloidal fraction of HAs only accounts for a minor fraction of total OC (<5%) at pH 4.4, Pu binding to HAs accounts for 61-83% of the total added Pu, indicating colloidal organic matter as the mobile Pu carrier in the wetland area. Lastly, ^{239,240}Pu concentrations were found to be positively correlated with particulate hydroxamate and nitrogen contents, indicating binding to siderophores.

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