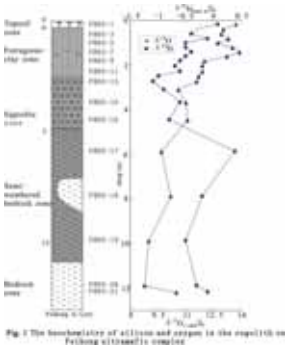
Geochemistry of Silicon and Oxygen in the regolith on Feihong Ultramafic Complex,West Yunnan, China

ZHUSEN YANG*, Y. LIU AND S. TIAN

Institute of Mineral Resources, CAGS, Beijing 100037,China
(*correspondence:Yangzhusen@sina.com)
(lychappy@126.com, Tiansh2002@sina.com,)

The regolith on Feihong ultramafic complex, approximately 20km southwest of Luxi in western Yunnan, can be divided into five horizons (Fig. 1).



The authors tested samples from every horizon and got the dates of $\delta^{30}Si_{NBS-28}$ and $\delta^{18}O_{V-SMOW}$. Fig.1 illustrates from the bedrock zone to the topsoil zone the values of $\delta^{18}O_{V-SMOW}$ give a rising trend but the largest value plots at Ferruginous-clay zone. The values of $\delta^{30}Si_{NBS-28}$ can be divided into two groups. The first group includes the dates in semi-weathered bedrock zone and bedrock zone and the rest is another group. The values in the first group are higher than the second group and in the second group from saporlite zone to topsoil zone the values of $\delta^{30}Si_{NBS-28}$ give a rising trend.

Based on the composition of every zone [1] we can see that along with the increasing weathered degree the values of $\delta^{18}O_{V-SMOW}$ become large and large. Because in the Ferruginous-clay zone the clay minerals are mainly goethites [1] whose $\delta^{18}O_{V-SMOW}$ are large, the largest value plots at this zone. The values of $\delta^{30}Si_{NBS-28}$ in the semi-weathered bedrock zone and bedrock zone are larger than the other four weathered zones. Meanwhile by the leaching and desilication in the saporlite zone and Ferruginous-clay zone, the silicon transport downwards. When they reached saprolite zone which represents the ground-water level the silicon accumulate here and the values of $\delta^{30}Si_{NBS-28}$ reach the least.

This study indicates the geochemistry of silicon and oxygen can reflect the degree of weather. While the $\delta^{18}O_{V-SMOW}$ is large, the rocks are weathered more. The values of $\delta^{30}Si_{NBS-28}$ become larger while rocks are weathered and they can reflect the location of the ground-water level.

This work was supported by grants (Contract No. 40473015).

[1] Yangzhusen *et al.* (2001) *Acta Mineralogica Sinica* **21**, 625-631.

Metallogenic controlling factors for metamorphic-sedimentary Mn-deposits in Hougou-Dapingshan Area, South Qinling Orogenic belt

Z.T. YANG[1,2], X.Y. YANG[2,3], Z.M. LI[1], G.B. QIAO[1], H.P. HUANG[1] AND Z.B. SONG[1]

[1]Xi'an Institute of Geology and Mineral Resources, Xi`an 710054, China (xayzhongtang@cgs.gov.cn)
[2]State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences, Wuhan 430074, China
[3]CAS Key Laboratory of Crust-Mantle Materials and Environments, School of Earth and Space Sciences, University Science and Technology of China, Hefei 230026, China (mikexy555@126.com)

Introduction

We recently founded the Hougou-Dapingshan manganese (Mn) and phosphor (P) metallogenic belts including three high quality metamorphic-sedimentary Mn deposits. This belt is located in the middle-east part of the South Qinling Mn-P metallogenic zone. The three high quality Mn ore-bodies are carbonaceous argillaceous rock-carbonatite formations of Tananpo Formation (Lower Cambrain) which belongs to Mn-bearing facies by function of metamorphism. This Mn-P metallogenic zone is a potential non-metal mineral resource base in China.

Results

Based on the Mn metallogenic and geological characteristics, we discussed the metallogenic condition of high quality Mn deposits. The results indicate that the Mn-bearing sediments were controlled by fissured depressive tectonic basin, i.e. crystal basement, whose characteristics is the transitional crust property of Pre-Sinian System (later Proterozic). The metallogenic geochemical background indicates Mn and P concomitance, lower Co content, lower Co/Ni ratio and Ni, Cu, Pb, Zn and B of higher coefficient of enrichment and polygenous metallogenic compositions. Mn metallogenic process has evident feature of basin-controlling, schistosity-controlling, single lithology. High quality Mn ore are controlled by Mn-P-bearing sedimentary rocks and Mn metallogenic seam exists on the P metallogenic seam. Manganic limestone (including dolomite limestone) and pyritic charry schist are considered as prospecting indications.

This study is supported by the Chinese Ministry of Science and Technology (2003CB214600).