

Introduction of Yutangba Selenium Deposit in Enshi, China

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Selenium is a non-metallic trace element, which exists in multiple chemical forms in seawater, soil, rock, plant et al., including different oxidation states and organic metalloid compounds. In nature selenium is hard to form independent minerals, instead it is dispersed in other minerals and media, which is why the geochemical study of selenium did not attract any attention of research workers concerned till the 1960's.

Recently, it has been found that selenium is considerably enriched in black rock series, especially in "**silicalite formation**" (There exists a sediment formation in nature, which includes siliceous rocks, mud stone/shale or clays, carbonate and siltstone, and is richen organic sediments and bacterium-alga microbe.) in SW of China. Among them, the Yutangba Se deposit in Enshi is the most typical example. It is well known for high Se contents (8590×10^{-6}) and a sudden incidence of human Se poisoning occurred in 1963 in this area. This ore deposit is easy to explore and exploit, belonging to the sedimentary-reworked-type strata-bound ore deposits.

This deposits locates in the north of Yangtze platform and upper-Yangtze fold belt, is controlled by Shuanghe syncline. We did geochemistry work for selenium-rich siliceous rocks in "silicalite formation" in detail. It has high $\text{SiO}_2/(\text{Na}_2\text{O}+\text{K}_2\text{O})$, SiO_2/MgO and the low MgO and Al_2O_3 contents, and has high Cu, Cr, $\text{U/Th} > 1$. By studying geochemistry character, it suggests that selenium-rich rocks are mainly hydrothermal sediment genesis. And it is related with volcanism, parts of microbe participate in sedimental-diagenesis. For selenium's mineralogy in Yutangba, it suggests that selenium has 4 forms lying in the deposits. They are native selenium, independent mineral, isomorphism and organic matter adsorption. Native selenium minerals present in the abandoned stone coal pile are the outcome of a combination of natural factors and anthropologic activities.

Our results support that Se is a very absent mineral resource, deep-going study of the forming environment and metallogenic characteristics of the Yutangba Se deposit is of great significance in search of ore deposits of the same type.

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