Anaerobic cultivation and degradation capability evaluation of microorganisms in petroleum-contaminated groundwater at low temperature

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In this study, water and soil samples were collected from the shallow groundwater in vertical direction of a petroleum contaminated site in the northeast of China. Cultivation research of anaerobic microorganisms and microbial degradation test of TPH were carried out using 0# diesel oil as the sole carbon source. Microorganisms were enriched in the four traditional culture media by anaerobic pyrogallic acid method [1,2].

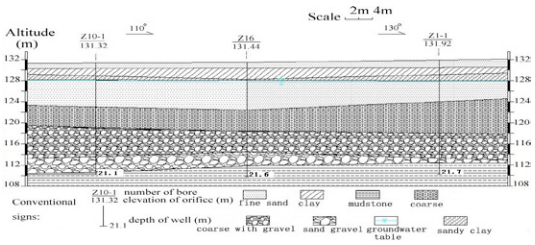

Figure 1: Hydrogeologic profile of petroleum-contaminated site

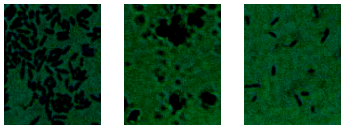

Figure 2: Morphology of three kinds strains which had the most degradation effect on TPH under the microscope

Discussion of results

Species and relative density of microorganisms were heterogeneous in different layers of groundwater after 10 days' cultivation at 10°C. All of these strains had a certain extent of degradation effect on TPH in oxygen limited environments under low temperature, with three kinds of which had a degradation efficiency of more than 60%.

[1] Zhang Yu-Ling *et al*. (2008) *Journal of Harbin Institute of Technology* **40,** 1481-1484. [2] Zhang Lan-Ying *et al*.(2007) *Chemical Research in Chinese Universities* **23,** 1-4.

Characteristic and the formation conditions of chlorite in granite-type uranium ore-field, South China

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Granite-type uranium deposits were the most important uranium mining deposit type in China currently. Chloritization was one of the most developed hydrothermal alterations during the uranium mineralization, and also developed before and after the mineralization. Quarry operation had proven that chloritization-type-ore not only the important supplement of the traditional silicification-type-ore but also a new high-grade type ore. Three representative granite-type uranium ore fields in South China had selected in this study. Based on the field investigation, representative chloritization-uranium-ore had been sampled. Separating of clay minerals, XRD analysis and electron probe microanalyser(EPMA) had been employed to study the characteristic and the formation condition of the chlorite.

It is revealed the assemblage type of clay minerals were chlorite-illite or illite-chlorite types. Chlorite distributed in the rocks either in pseudomorph of biotite or vermiform and flaky conglomeration in veins. Brunsvigite and Ripidolite had been distinguished based on the chemical composition based on EPMA analyze, magnesium and iron chemical composition of chlorite varied greatly, chlorite was mostly derivated from the argillaceous rock based on nAl/n(Al+Mg+Fe) value, escept some from the magnesium-rich fluid which might announce that there were some chlorite and even the chloritezation-type-ore had be contaminated by Mafic-rich fluid. The formation temperature varied in 163□287°C had been calculated. The temperature of chlorite which related to the formation of uranium deposit is higher than the chlorite which formatted before and after the uranium mineralization. And the temperature is closed to the temperature of uranium deposit. The chlorite formed under reduction condition. Dissolve-precipitation and dissolve-transfer-precipitation were the formation mechanism.

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