

## The characteristics of polycyclic aromatic hydrocarbons (PAHs) in the drainage basin of the Liao River, Northeast China

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Sixteen polycyclic aromatic hydrocarbons (PAHs) in surface water and suspended particulate matter (SPM) in the drainage basin of Liao River were determined by GC/MS. The concentration and distribution characteristics, pollution levels, and sources of PAHs were discussed. The total PAHs concentration ranged from 0.41 to 76.45  $\mu\text{g}\cdot\text{g}^{-1}$  (dry weight) in SPM, and 32.57 to 108.47  $\text{ng}\cdot\text{L}^{-1}$  in surface water, respectively. The PAHs concentration in west Liao River is higher than that in east Liao River and Liao River main stream. The compositions of PAHs are predominant by low ring PAHs (two and three-ring PAHs), and the percentage of low ring PAHs in dissolved phase is higher than that in SPM. The percentage of two-ring PAHs in dissolved phase is highest with an average of 68.19%, while the percentage of three-ring PAHs in SPM is highest with an average of 66.28%, respectively. Compared with other rivers in China and the world, the PAHs concentrations in Liao River drainage basin are at a lower level, but some branches are PAHs-contaminated to some extent.

Diagnostic ratios of Ipy/(Ipy+Bpe) and Fla/Fla+Pyr were used to identify the PAHs sources, and the result suggested the main sources of PAHs would be petroleum and fossil fuel combustion-based, which are resulted from complex energy structure of Liaoning province.

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## Mineral compositions of Lower Silurian Longmaxi Formation, Sichuan Basin, China

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The Sichuan Basin is a prolific hydrocarbon region and is currently China's largest gas-producing region. In order to study the mineral properties, composition and the relationship with the organic matter characteristics in Lower Silurian Longmaxi Formation shale, 30 shales from Longmaxi Formation fresh outcrop cross sections located in Changning County in Sichuan basin were analyzed.

The analysis result shows that mineral compositions are brittle (fragment) minerals: quartz, feldspars, mica, pyrite; siliciclastic and calcite minerals: Chalcedony, calcite and dolomite; and clay minerals: Illite, chlorite and montmorillonite. These samples display significant variations in the proportions of detritus derived extrabasinal and intrabasinal sources. Quartz in particular occurs in both clay-size and silt-size fractions of both intrabasinal and extrabasinal origin and it is important that lots of dark luminescing microcrystalline (clay-size) quartz closely intergrown with clay minerals in the samples. The organic matter occurrence modes have important relationship with the mineral character. The finer fracture in the fragment minerals have huge influence to the produce and travel of the shale gas.

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