Geochemical characteristics of the shale gas reservoir rocks in the Lower Silurian Longmaxi Formation，The southern Sichuan basin，China.

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The most favorable reservoir of the Longmaxi Formation shale has been identified as the graptolite rich black shale(>20M thick) at the bottom of the Longmaxi Formation. It is also the highest quality source rocks. The graptolite rich black shale contains 1.51% to 6.75% of organic carbon (TOC).The organic matter is overmature,with Ro 2. 0% ~ 3. 6% and dominated by typeI-kerogen and II-kerogen. The total content of three brittle minerals: quarta,feldspar and carbonats to over 50%.The formations are generally rigid. These conclusions come from changes in the test results of reservoir rocks samples from the Lower Silurian Longmaxi Formation are summarized on the basis of 11 field outcrop section and 20 exploration wells mainly located the southern Sichuan basin.The maturity of organic matter similar to the Arkoma basin Fayetteville shale in USA (Ro=1.2% ~ 4.2%, the main producing areas of Ro=2.0% ~ 3.5%).Also they have similar organic types and abundances than Fort Worth basin Barnett shale in USA.

Through geochemistry analysis include trace elements and TOC in Longmaxi Formation rocks, most of the value (V/Cr,Ni/Co,V/(V+Ni), U/Th, AU,δU and TOC) performance are gradually decreases upward from the bottom(Fig.1).

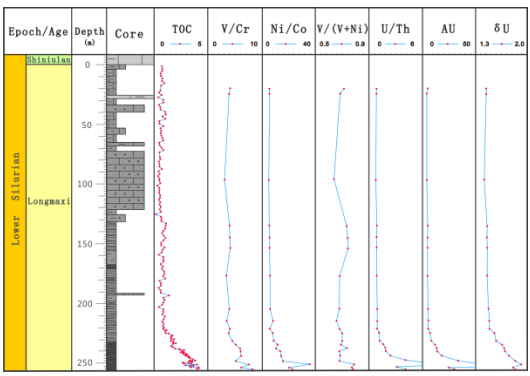

Fig1. Picture shows the changes in the value of trace elements and TOC from the Longmaxi Formation.

The value of the graptolite rich black shale in bottom of Longmaxi Formation is largest, and expressed as a anoxic reduction environment. This environment is conducive to the enrichment and preservation of high-quality source rocks.