Oil generation kinetics: experimental approach (Domanic shale Fm., Russia)

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Theory and Method

The reserves of unconventional shale formations directly depend on properties and type of organic matter of formation and its maturity. Each source rock (SR) has its own unique characteristics. We studied the generation properrties of immature Domanic (D3fr) siliceous-carbonate SR (Timan-Pechora Basin, Russia). Hydropyrolisis method was used to simulate oil and gas generation in laboratory conditions. Experiments were conducted at different constant temperatures [1, 2] (250, 275 and 300°C) for 9,5 days. We checked amount of generated oil every day.

Discussion of Results

We get 'oil generation'/'time' curves for Domanic SR. Results of experiments show that there is dependance between SR generation kinetics and sample litology (if shale has more siliceous or carbonate composition) (fig. 1). Results allow to evaluate Domanic shale formation reserves more correct as we get dependance maturity-generation for different lithotypes of Domanic. This experimental approach could be used for other shale formations.

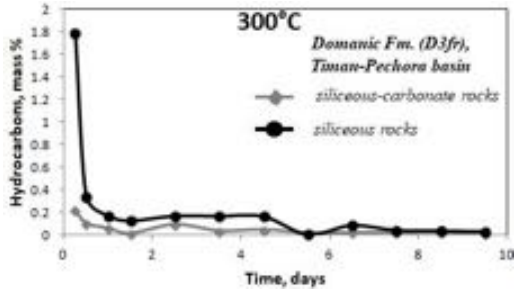

Figure 1: Synthetic oil generated by hydropyrolysis.

[1] Liang M. et al., *Journal of Petroleum Science and Engineering* 125 (2015), 209–217. [2] Barth T. et al., *University of Bergen, Org. Geochem.* (1989) Vol. 14, 69-76.