



New method for gas and oil shale reservoirs characterisation using magnetic analysis

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This research describes proposed method for determination of total organic content (TOC), clay typing and relative degree of maturation in shale unconventional reservoirs based on analysis of magnetic properties of shales. Experimental measurements were undertaken in shales from United Kingdom (Edinburgh shales) and Kazakhstan for comparison of their magnetic properties, including low field and high field magnetic susceptibilities, together with SEM and XRD analysis. The results showed that studied shales comprised of various clay types had different capacity in accumulation of organic matter, thus, affecting the total organic content and magnetic properties. Based on the results we proposed magnetic indicators (MI) of productive gas and oil shale intervals in order to determine relative TOC, clay typing and a degree of maturation. The set of magnetic measurements, used as a logging tool or core scanning procedure, can potentially provide data about selecting the best shale productive reservoir horizons. This can be a non-destructive and rapid method for shale reservoir characterization, being used routinely in both laboratory and field conditions.