Absorbed gas content and its isotopic composition in promising shale gas formations from Czech Republic

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The importance of the shale gas potential evaluation is growing according to worldwide demand for gas. The presented research was aimed to determine amount of the absorbed gas and its isotopic composition in the three promising shale gas formations in the Czech Republic. In total 16 samples were collected from core depository. The homogenized samples were analyzed for the total organic carbon (TOC), Rock-Eval pyrolysis, GC and GC-MS chromatography, x-ray diffraction. Amount of gas released from rock powder was quantified as ml CH_4/g rock after its reaction with extraction solution, isotopic composition of methane; ethane was measured with GC-IRMS. According to the source rock generative potential criteria all evaluated rock samples were good oil and/or gas prone source rock with maturity range from immature to early mature. The methane content in Jurassic marls varies from 0.0026 to 0.0160 ml/g rock with -26.9 $d^{13}C$ (‰). The methane content in Silurian shale's is ranging between 0.000044-0.001440 ml/g rock with -30.4 $d^{13}C$ (‰) and in Carboniferous claystones between 0.000016-0.0001 ml/g rock with -24.9 $d^{13}C$ (‰). The gas content does not correlate with organic matter content and mineralogical composition in any of studied samples. The methane content in Jurassic marls is linearly growing with depth.