

## **Parallel Liquid and Gaseous Adsorptions in Mississippian Lacustrine Horton Group Shale, Eastern Canada: Dependency on Maturation and Variability in Maceral Speciation (labile versus inert)**

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The Mississippian Horton Shale sequences of the Eastern Canada were evaluated based on the relation between the methane adsorption characteristics to the organic facies, maturity and mineral matrix. The amount of adsorbed and free gases is related to the organic speciation (labile versus inert) and organic-minerological complexes during the course of advanced maturity. This data also illustrated that they have a close relationship with the extractable liquid hydrocarbons, transformation of adsorbed and free gases, the timing of pore pore network within the shale plays.

The gas adsorption and desorption characteristics in kerogen Type I, II, II-III shale facies of the Horton Group indicates a possible presence of parallel gas and liquid adsorptions within the labile phases of the organics in association within carbonate and clay matrix. This data may suggest possible implications of of multiplayer adsorptions that could be defined both by Langmuir and BET formulas where adsorptions are pressure and temperature dependant. This data defines the maturation time sequences of gas adsorptions to free gas state within different organic (macerals) and mineral-bituminous species (algal versus amorphous or amorphous versus vitrinitic).