High Resolution Geochemistry Technology (HRGT) applied to the characterization of the Petroleum System of the Mexican Basin

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Petroleum explorationists have always searched for new trustful exploration tools to provide valuable pre-drilling insights regarding the types and potential volumes of hydrocarbons yet to be found at mature and unexplored deep and ultra deep water sedimentary basins. Present-day analysis of petroleum systems, when performed integrated with direct geochemistry, remote sense and high resolution geochemistry technology (HRGT), can provide accurate and useful pre-drilling insights regarding the quality and potential volumes of hydrocarbons to be found, including deep reservoirs, oil quality, oil versus gas prone, degree of cracking and of mixture of hydrocarbons derived from different sources, from different petroleum systems.

The recent application of those technologies, which consists of a complete characterization of the oil, gas and source rocks using Satellite images, piston core analysis, GC-MS, GC-MS-MS, Diamondoids, CSI-B and CSI-D methods, integrated with detailed geological and geophysical characterization, provide trustful and accurate approaches that allows the explorationist to play with a different likely scenarios to obtain a useful pre-drilling prediction exploration tools. The idea can be old but the practical use of this method is recent and represents an exploration breakthrough in petroleum technology.

The application of this new petroleum technology in Brazil and in the Mexican Gulf of Mexico petroliferous basins showed that it can provide not only the assessment of the remaining exploration potential of mature sedimentary basins, but also detect new probes never imagined before, and therefore finding new frontiers for petroleum exploration and production.