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A synthetic study of unconventional HC potential reservoir in Taiwan

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The exploration of unconventional gas resource achieved a successful breakthrough in the USA; this is mainly a result of the innovation of hydraulic fracturing and horizontal drilling since 1995, which leads to a drastic change in global energy demand and supply. Since energy demand is still increasing in the world, the exploration of unconventional fossil fuel becomes more and more important today [1, 2]. Taiwan has a strong energy demand and still highly relies on imported fossil fuel; the development of unconventional gas resources also needs to be considered. Therefore, the objective of this study is to evaluate the potential of unconventional oil-gas in Taiwan by using various synthetic methods. Miaoli area of the NW Western Foothill Belt, Taiwan, had been a major oil and gas producing field with important oil/gas producing structures. The reservoir rocks of unconventional resources need to be examined to illustrate the remaining hydrocarbon potential. Western Foothill Belt includes three Miocene coal-bearing formations: namely Mushan, Shihti and Nanchuang Formations from bottom up. Sandstone, shale and coal samples from field outcrops including Chinshuish, Cholan Fm, Yutengpin ss, Kuantaoshan ss, Shangfuchi ss, Tungkeng Fm, Guanyinshang ss, Talu sh and Peiliao Fm; as well as Chuhuangkeng Fm, Piling sh, Mushan Fm and Wuchishan Fm samples from drilled cuttings and cores were collected in the study area. Porosity, permeability, TOC, thermal maturity, and mineral composition of samples are examined along with a series of geochemical analyses including petrographic maceral composition, vitrinite reflectance, C-H-O major elements, total organic carbon (TOC), Rock-Eval Pyrolysis, XRD and petrographic thin section analysis so as to evaluate the relationships among samples collected [3-5]. A standard evaluation procedure for assessing integrated geochemical parameters can thus be established. The established oil/gas system is valuable to evaluate the recovery potential of shale gas and/or coal gas.

References:

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