Pyrolysis of Organic Rich Shales for Shale Gas Extraction: A Study from Cambay Basin, India

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ABSTRACT

The economic success of Shale Gas in the US has spurred interest in other countries. Shale gas is natural gas produced from shale formations which is an important area of research internationally and is of great national interest as shale gas potential evaluation will have direct positive impact on energy security of India. Geochemistry is the key to petroleum systems because it is required to establish the genetic link between petroleum to source rock, map the geographic extent of the petroleum systems and assess the petroleum generation potential. Source rock assessment studies presents organic richness, type of organic matter (kerogen) present and what hydrocarbons might be expected after generation, and the sediment's thermal maturity and its influenced generation. Shales of Cambay formation in Cambay Basin have a fair to excellent TOC values ranging from 2.06 to 4.87 wt.% with an average 2.08 mg HC/g rock genetic potential which infers good genetic potential of the samples. The HI ranges from 24 – 148 mg HC/gTOC, with an average value of 65 mg HC/g TOC, suggesting gas generation potential. The presence of kerogen type III indicates the terrestrial source of organic matter; however, the gas may be generated due to insitu thermal cracking of oil.

Keywords: Cambay, Rock Eval Pyrolysis, shale gas, TOC