

FTIR CHARACTERIZATION OF DEVONIAN SHALES (MARCELLUS-BATU GAJAH)

The Marcellus shale Early of Mid Devonian is distributed through out of the Appalachian basin in United States (Hall, 1839) and contains 1-17% TOC (Ver Stratean 2011). The Devonian carbonaceous shale of Batu Gajah in western Malaysia contains greater than 6% TOC, while it is known that the Marcellus shale is a source and reservoir, the status of the Batu Gajah is unclear at the moment.

The aim of this study is to carry out an evaluation FTIR for these two types of shales in terms of their efficiency as hydrocarbon source rocks.

The FTIR spectra were obtained using Agilent FTIR- ATR spectrometer scan range from 400 cm^{-1} to 4500 cm^{-1} .

The Marcellus shale samples had C-H₂ aliphatic, C-H methylene, C-H aromatic, O-H alcohol stretching, sulfurs compound S-S and C=O carbonyl compounds bonds. Ketone compounds were present only in some samples. Similarly O-H carboxylic acid compounds were present in some samples only.

The Batu Gajah shale samples had C-H₂ aliphatic stretching, O-H alcohol stretching, and N-H amines compound bonds. Alkane C-H methylene bonds were present in some samples only. Similarly C=C ketone, C-H aromatic and C≡N compounds were absent in some samples. Sulfur was also detected in some samples.

Marcellus and Batu Gajah samples are dominated by aliphatic compounds.

The dominance of bonds characteristics of aliphatic compounds indicates that the Batu Gajah shale has a very potential of being a source rock.

