PDPT02-05

Potential of Solvents in the Study of Carbon Concentrations in the Bendang Riang Formation, Malaysia

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Western belt of Malaysia Peninsula comprises a lot of Paleozoic black shales that have the potential to be source rocks. This study focuses on twenty Paleozoic black shale samples of lower Silurian to lower Devonian from an isolated outcrop (location: 05°36'57"N, 101°01'48"E) belonging to the Bendang Riang Formation (Baling Group) [1]. This study site is located 10 km northeast of Grik, Northwest Peninsular Malaysia (Figure 1).

The preservation of organic matter in terms of quality and quantity in a black shale is the result of a complex interaction of sedimentological and oceanographic factors [2-7]. Information on the type and quantity of organic matter present in sedimentary rocks is essential, both for oil/gas exploration purposes and in-depth knowledge on geology [8, 9]. Therefore, the aim of this study was to carry out an evaluation by using Ultraviolet–visible (UV-Vis) spectroscopy to see the presence of organic matter quality and concentration in selected black shales of the Bendang Riang Formation. UV-Vis spectroscopy is routinely used in analytical chemistry for the quantitative determination of different analytes, such as highly conjugated organic compounds. The UV-Vis analysis is this study specifically focuses on the E_4 (465 nm) and E_6 (665 nm). All samples are black in color, suggesting a high content of carbon. Different solvents were used to extract the organic fraction from the shales. In this study, methanol and dichloromethane (DCM) were used as an extracting agent. The results show that methanol has a higher potential to extract organics as compared to DCM (Figure 2). Despite this, it was observed that for each treatment, the quantity of E_4 and E_6 were very similar (Figure 3).

Figure 1: Study outcrop of the Bendang Riang Formation represented by a thick unit of grayish black shale.

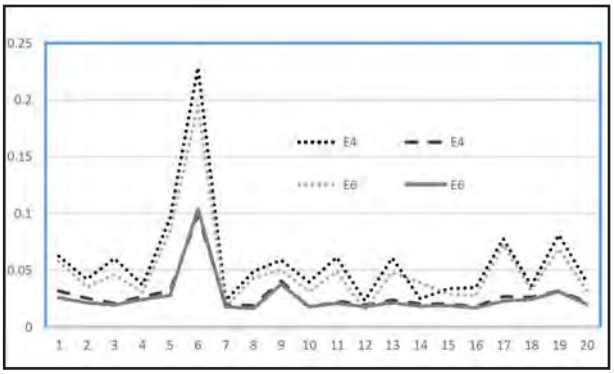

Figure 2: Comparison of DCM and Methanol for extraction of Organics.

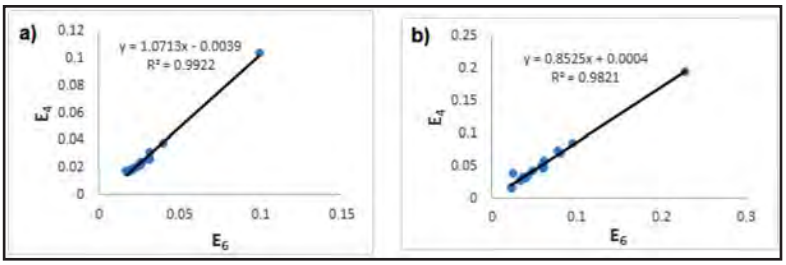

Figure 3: Relationship of E_4 and E_6 values a) Treated with DCM, b) Treated with Methanol..

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