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Depositional Characteristics of Organic Material in Guanxin Algal Reef, NW Taiwan

Yi-Han Hsieh (1) and Louis L. Tsai (2)

(1) National Central University, Graduate institute Applied Geology, Environmental Geochemistry, Taiwan (soz83726@yahoo.com.tw), (2) National Central University, Graduate institute Applied Geology, Environmental Geochemistry, Taiwan (ltsai@geo.ncu.edu.tw)

Marine peat swamp has a significant contribution in peat basin. Marine organic matter is possibly an important hydrocarbon source. Amorphinites (bituminites) or alginates in marine shales especially possess the highest oil potential, and is worth to be examined. In order to explore the process and mechanisms of organic matter during burial and preservation processes, the Guanxin algal reef, which is an intertidal zone enriched with algal organic matters in NW Taiwan, is selected as the study area. The depositional characteristics of present organic matter in algal reef are assessed through various geochemical analyses. In this study, there are two sampling sites – off shore and near shore. Samples were collected from different depths (0-5 cm, 5-15 cm, 15-30 cm and 30-40 cm) for both sampling sites. Seawater quality were examined by using a water analyzer while collecting samples. Near shore samples exhibit higher salinity and lower dissolved oxygen. As for Rock-Eval Pyrolysis and total organic carbon (TOC) contents, all samples show TOC, S1 and S2 below 0.5%, 0.5 mg HC/g rock, and 2.5 mg HC/g rock, respectively. Hydrocarbon potential is low due to low organic carbon content and low maturity. Off shore samples exhibit higher organic carbon content and vertical variation. X-Ray Diffraction (XRD) for whole rock and clay mineral will be preformed for mineral composition and served as indications of depositional environment. Furthermore, biomarker analysis can further indicate the depositional source and contamination from carbon-skeleton of organic materials. Based on the above analyses, depositional environment and mechanism by sediment characteristics at different localities and depths can be evaluated. Finally, a better understanding of the controlling factors and mechanism of the accumulation of hydrocarbon could be achieved.