
POSTER 4 (PS4)

**HYDROCARBON POTENTIAL OF THE COALS AND SHALES AT THE
 EUCALYPTUS CAMPSITE AREA, MALIAU BASIN, SABAH**

**Zulkifli Salleh¹, Awang Sapawi Awang Jamil¹,
 Kamal Roslan Mohamed² & Che Aziz Ali²**

¹ Group Research, Research & Technology Division, PETRONAS, 43000, Kajang,
 Selangor

² Faculty of Science and Technology, Universiti Kebangsaan Malaysia,
 43650, Bangi, Selangor

ABSTRACT

Six shales and four coals of the Kapilit Formation from the adjacent area of Eucalyptus campsite, Maliau Basin, Sabah were analysed using organic petrological and organic geochemical methods to determine their hydrocarbon generating potential, maturity and depositional environment. The organic richness of the shale samples is generally good to very good, whilst for the coals, as usual, show very good organic carbon richness. The shale samples also show good to very good hydrocarbon generating potential (S2 values from 5.0 to 37.3 mg HC/g rock), except for two samples which possess poor hydrocarbon generating potential (S2 <1.0 mg HC/g rock). Hydrogen Index (HI) for the shale samples are less than 200, except for sample S25 (HI = 228), and this suggests that the shales contain mainly gas prone, Type III organic matter. The hydrocarbon generating potential for the coals are very good (S2 values from 126.8 to 228.4 mg HC/g rock) and their hydrogen indices are also quite high (197 to 327), indicating that the coals have some potential for liquid hydrocarbon generation, in addition to gas. Evaluation on thermal maturity shows that the samples are in the early to main stage of oil generation as indicated by VRo values of between 0.57% and 0.80%. Visual organic matter typing show that both shales and coals contain mainly terrigenous derived organic matter. In the shale samples, vitrinite and inertinite are the dominant macerals and constitute more than 70% of the total kerogen, while fluorescing organic matter content which basically consist of liptinite and fluorescing amorphous, ranges from 10 to 20%. In the coal samples, vitrinite is the most dominant maceral (~70%), while liptinite content range from 20% to 30%. Inertinite content is low (10% or less). Some hydrocarbon generative features, such as oil smears or hydrocarbon haze and vesicles can be observed in the coal samples, suggesting that some hydrocarbons have been generated from the coals. The biomarker characteristics also suggest that the rocks analysed contain high abundance of land plant organic matter as shown by the high pristane/phytane (Pr/Ph >5.0) ratio, odd-over-even *n*-alkane distributions, presence of oleananes and dominance of C₂₉ sterane homologs. Tricyclic terpanes and C₃₀ steranes which are derived mainly from algae organic matter are present in very low relative abundance or are virtually absent. The depositional environment for the shales and coals is probably in a coastal plain or deltaic setting under oxic condition.