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Organic geochemical characteristics of coal deposits in Mae Than coal mine, Lampang Province, Thailand

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Fifteen samples were collected from coal mines Mae Than basins located in Lampang Province, Northern Thailand to investigate organic geochemical characterization which can provide organic matter input, thermal maturity and depositional environment. The total organic carbon (TOC) content of the coal samples ranges from 30.12 to 73.71 wt. %, while shales and mudstones value between 5.98 – 24.87 wt. %. The extractable organic matter (EOM) content of all samples, which is yielded from bitumen extraction, values in the range of 1,256 and 16,421 ppm indicating good to excellent hydrocarbon generation potential. The organic geochemical data were studied by using Gas-chromatography Mass-spectrometry (GC-MS) providing biomarker and non-biomarker data. The thermal maturity of studied samples is represented as immature stage due to ratio of $Ts/(Ts+Tm)$ and homohopane isomerization. The distribution of normal alkanes is predominantly long-chain normal alkanes with odd-numbered carbon. The high Carbon Preference Index (CPI) value of samples indicates terrestrial organic matter input. The depositional environment of the study area can be interpreted that the coal formation is occurred within an oxidizing condition with the majority of higher plant input, whereas shale and mudstone is slightly more anoxic-aquatic environment.