Pyrolysis Gas Chromatographic, FTIR and Elemental Analytical Study on Kerogen Concentrates to Characterise Organic Facies

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Over 200 organic rich samples have been chosen for this study. The purity of prepared kerogen concentrates were checked by X-ray diffraction and their C, H, N, S and Fe contents were determined. For characterization of kerogens i.r. absorbance ratios (e.g.: A_{2922}/A_{1708}, A_{2922}/A_{1605}, A_{1708}/A_{1605}) were also applied, and on the basis of FTIR and elemental analyses, samples can be related to their respective basic structural units linked by C-C, C-N, C-S and C-O bonds in different proportions. These analyses give information of gross composition of kerogen, but without any estimation of the hydrocarbon product distribution. Pyrolysis-gas chromatography (Py-GC) provides a direct compositional link with products expected to be formed from kerogens studied during catagenesis by offering a more detailed insight into kerogen structure. Numerous homologue series have been found in pyrolysates and both their relative and absolute abundances have been exploited to infer precursors, extent and type of diagenetic processes and level of catagenesis. Based on relative proportions of oct-1-ene, (m+p)-xylenes and phenol shown in pyrogram, the samples can be divided into groups. The source properties of the samples can be determined on the proportion of different hydrocarbon groups in pyrolysate (C_2-C_5-, C_6-C_{14}- and C_{15+} - *n*-alk-1-enes and *n*-alk-anes). The variety of organofacies and differ-ences in depositional settings can be demonstrated by relative abundances of homologues{e.g. ratios of 2-methylthiophene/tolu-ene and prist-(1+2)-ene/n-heptadec-(ane+ene)} TOC, S_{org}, HI, atomic ratios: H/C, C/N, C/S, S/N. The depositional environment is elucidated by the observed relationships between characteristic parameters applying the analytical techniques.

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