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New records from the carbonated Montejunto Formation (Lusitanian Basin, Portugal): Organic petrography and geochemistry approaches

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Integrated geochemical and petrographic studies were carried out in eighteen cutting samples, spanning the Montejunto Formation in two different wells drilled in the Arruda sub-basin (Lusitanian Basin, Portugal). The hydrocarbon potential and quality of the source rock was determined by Rock-Eval pyrolysis and total organic carbon. The thermal maturity was determined by vitrinite reflectance, T_{\max} and biomarker ratios. Optical techniques (reflected, transmitted white and incident blue lights) and biomarker distribution were used to characterize the organic matter composition. The total organic carbon (TOC) content of Montejunto limestones samples range from 0.26-1.28wt.% and yield hydrogen index from 17 to 456 mg.HC/g.TOC, corresponding mainly to a type III kerogen with minor type II kerogen. Tmax range from 385 to 460°C, vitrinite reflectance > 0.5%, CPI close to 1, M30/H30 < 0.15, H32S/(S+R) terpane and $C_{29}\beta\beta/(\alpha\alpha+\beta\beta)$ sterane ratios reached the equilibrium values, indicating a mature stage for the organic matter. Optical microscopy shows that the kerogen is composed of a variable mixture of marine and continental components. The bottom of the formation shows predominance of amorphous organic matter. The n-alkanes distribution is characterized by low to medium molecular weight compounds ($^{n}C_{15}$ - $^{n}C_{21}$) and the C_{27} steranes usually dominates over the C_{29} steranes. According to the data obtained in this study, the carbonate Montejunto Formation can be considered a potential source rock of hydrocarbons in this section of the Lusitanian Basin.

Biography

Paula Alexandra Gonçalves earned her MS in 2006 from the University of Azores for studies in Volcanology and Geological Hazards. Currently she is pursuing PhD studies in organic petrology and geochemistry at the Geology Centre of the University of Porto (Portugal). Her research is focused on the study of Jurassic sedimentary successions of the Lusitanian Basin (Portugal) in order to define the potential source rocks.

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