

Applications of Palynology and Palynofacies Analysis to the Hydrocarbon Exploration in the MENA Region

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ABSTRACT

Palynology has been widely utilized in the hydrocarbon industry during the mid-twentieth century as a standard tool in the explorationist's armory. Since the eighties, it does not mean solely the study of spores and pollen. It encompasses investigations on all kinds of microscopic organic particles ranging from entities with well-defined morphology, structured and unstructured remains, and other tissues of uncertain origin which are less easy to categorize. Although palynology has varied applications in paleoenvironmental and paleoclimatic reconstructions, the biostratigraphic application of palynomorphs continues to be the most important area of activity for the majority of palynological research and is still the bread and butter of most studies. In addition, palynofacies or kerogen analysis has a great value to hydrocarbon exploration in determination of petroleum source potential from the quantity, quality and maturation of organic matter (OM) recovered from sedimentary successions. The current study based on few hundreds of samples retrieved from both surface exposures and subsurface borehole data. These samples are retrieved mainly from the Cretaceous of Egypt, Libya, Jordan and Iraq. It aims mainly to test the potential of applying aforementioned applications on the studied successions from the MENA region, in a term of regional perspective. Palynological study and organic matter determinations from abovementioned successions revealed outstanding results that help to redress a great imbalance in age determination, depositional environments and petroleum potential of the studied intervals. Although these intervals are of unique importance as hydrocarbon-bearing sequences, they greatly lack palynological research. Furthermore, the obtained results have been mostly supplemented with organic geochemistry. Such an integrated approach undoubtedly enhances detailed paleoenvironmental and petroleum source potential studies in the studied areas.