

## ANOTHER INSIGHT INTO LITHOLOGY AND GEOCHEMISTRY OF THE EL-LAJJUN AND ATTARAT OIL SHALE, MAASTRICHTIAN, JORDAN

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Traditionally, the Late Cretaceous to Early Tertiary oil shale (OS) is described as either bituminous or kerogen-bearing chalky marl. Huffnagel (1981) described seven 2-23 m thick oil shale subunits (indexed A...G) and a 1-2 m thick limestone interbed (AL) in the 80 m OS sequence of the El-Lajjun depression. In the organic-rich lower subunits A-D (40 m) oil yield is 7.8-12.6% (calorific value 4.7-8.2 MJ/kg). During 2007-2008 we analyzed two cores from eastern EL-Lajjun syncline and from the central part of the Attarat depression that correspond to lower subunits by Huffnagel (1981). Tertiary chalk and limestone overburden overlies discontinuity surface. The OS sequences differ from each other and from the Huffnagel's standard. They also differ from extremely high-carbonate OS in Syria and terrigenous siliciclastic OS of Egypt. The dominant, but largely varying in amount components are carbonate (calcite, rare dolomite) and chert (quartz, tridymite) mud with minor or rare admixture of carbonate or phosphate debris and fossils. The dominant structural type of mudstone is parallel fine laminite interbedding with parallel to lenticular grainstone laminite. The Jordanian OS belongs to the family of marinites by Hutton (1987). Geochemically, unlike the Estonian kukersite, the Jordanian, Syrian and Egyptian OS are enriched with P, S, and trace elements. However, the concentrations of trace elements are not as high as in graptolite argillite of Estonia or in alum shale of Sweden.