



SUPPLEMENTARY MATERIAL TO

Saturated biomarkers in the estimation of organic geochemical homogeneity of crude oils from four oil fields in Libya

RAMADAN MUSBAH M. SAHEED¹, TATJANA ŠOLEVIĆ KNUDSEN^{2*}, MUSBAH ABDULJALIL M. FARAJ¹, ZLATKO NIKOLOVSKI³, HANS PETER NYTOFT⁴ and BRANIMIR JOVANČIĆEVIĆ^{1#}

¹University of Belgrade, Faculty of Chemistry, Studentski trg 12–16, 11000 Belgrade, Serbia;

²Institute of Chemistry, Technology and Metallurgy (ICTM), Center of Chemistry; Njegoševa 12, 11000 Belgrade, Serbia; ³Institute MOL, Nikola Tesla St. 15, 22300 Stara Pazova, Serbia;

⁴Geological Survey of Denmark and Greenland (GEUS), Øster Voldgade 10, 1350 København K, Denmark

J. Serb. Chem. Soc. 85 (11) (2020) 1489–1499

SAMPLES

In this study, seven crude oil samples were analysed. The list of the samples with their general geologic data is given in the Table S-I. The locations of the oil fields from which the investigated samples were taken are shown in Fig. S-1.

TABLE I. The list of the investigated samples and their general geologic data

No.	Basin	Oil field	Sample	Reservoir depth, m	Reservoir temperature, °C	Reservoir pressure, bar
1	Sirte	Jakhira	Jak-1	3743	132	297
2		Jakhira	Jak-2	3795	135	298
3	Murzuq	Jalu (Gialo)	Jal-1	3003	75	28–1000
4		El Sharara	ELS-1	4369	142	170
5		El Sharara	ELS-2	3664	81	138
6		El Sharara	ELS-3	3772	130	142
7		Elephant field	Eleph-1	4261	137	169

*Corresponding author. E-mail: tsolevic@chem.bg.ac.rs

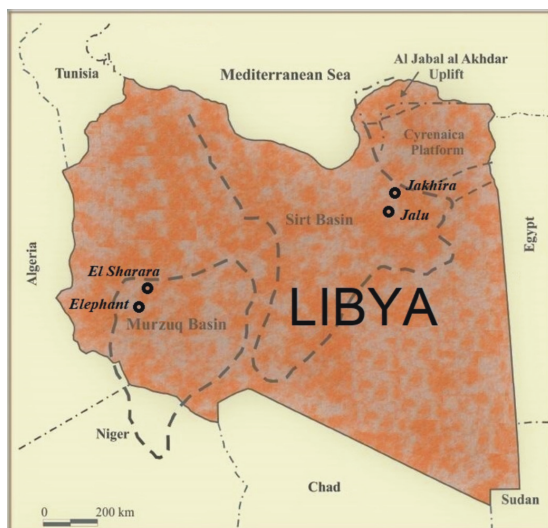


Fig. S-1. Locations of the investigated oil fields (modified from Hassan and Kendall, 2014¹).

Three samples belong to the Sirte Basin. Two samples originate from the oil field Jakhira (Jak-1 and Jak-2), and one sample originates from the oil field Jalu (Jal-1).

More than 89 % of all hydrocarbons discovered in Libya to date are located in the Sirte Basin.² This basin is Mesozoic–Cenozoic in age. The source rocks in it are rich and productive while the oils are of relatively high maturity. More than 80 % of the oils hitherto discovered in the Sirte Basin are in their reservoir rocks, and approximately 50 % of them are at depths from 2400 m to 3200 m, and at temperature ranging from 66 °C to 93 °C. Large reservoirs of oil are found in clastic and carbonate rocks.² The Jakhira and Jalu oil fields are located in the northeastern part of Libya (Fig. 1).

Four samples belong to the Murzuq Basin. Three samples originate from the oil field El Sharara (ELS-1–ELS-3), and one sample originates from the oil field Elephant (Eleph-1).

The Murzuq Basin is an intracratonic basin, formed during the Paleozoic because of Devonian tectonic movements. It is located in the south of Libya and extends in the Niger desert, covering the area of 320,000 km². The present day maximum thickness of the sedimentary fill is 4000 m, comprising Palaeozoic and Mesozoic sediments.²

The Elephant oil field is located in the southwest of the Libyan Desert, approximately 800 km south of Tripoli. The El Sharara oil field is located in the Murzuq Desert. Significant quantities of crude oil were discovered in these two oil fields.²

REFERENCES

1. H. S. Hassan, C. C. G. Kendall, *Hydrocarbon provinces of Libya: A petroleum system study*, in *Petroleum systems of the Tethyan region: AAPG Memoir 106*, L. Marlow, C. Kendall, L. Yose, Eds., American Association of Petroleum Geologists, Bath, 2014 (<https://dx.doi.org/10.1306/13431855M1063608>)
2. D. Hallett, D. Clark-Lowes, *Petroleum Geology of Libya*, 2nd ed., Elsevier B.V., Amsterdam, 2016 (ISBN: 978-0-444-63517-4).