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SOURCE ROCK CHARACTERISTICS OF THE SHIRANISH FORMATION IN THE EUPHRATES GRABEN, SYRIA

Shirin ISMAIL [1], Brian HORSFIELD [1], Heinz WILKES [1], Wilhelm DOMINIK [2] and Peter NEDERLOF [3]

1.GeoForschungZentrum (GFZ) Potsdam, Telegrafenberg, D-14473 Potsdam, Germany
2. Institut für Angewandte Geowissenschaften-TU Berlin-Ernst-Reuter-Platz 1, D-10587 Berlin, Germany
3. Shell International E&P, Rijswijk, the Netherlands

The Euphrates Graben is one of the most important petroliferous basins in Syria (Litak *et al*., 1998), the main source rocks being the upper Cretaceous Soukhne and Shiranish Formations and the Silurian Tanf Formation (Litak *et al*., 1998), (Brew *et al*., 2001).

We are studying the upper Cretaceous Shiranish Formation to identify the variations in source rock characteristics and their effect on the timing of petroleum generation.

Twenty eight source rock samples from well Omar-102 provided by Al Furat were analysed using Rock-Eval pyrolysis to determine the type of organic matter in the source rocks and its maturity; open system pyrolysis gas chromatography was carried out on thirteen selected samples to provide compositional and structural characteristics and to define the relationship between depositional environments and organic facies; bulk-flow pyrolysis was performed on eleven samples at heating rates between 0.7 and 15 K/min using a modified source rock analysis for determining kinetic parameters, The discrete activation energy distribution optimisation with a single frequency factor was performed using the Kinetics 2000 and KMOD® programs (Burnham et al., 1987).

Two organic facies with different characteristics of petroleum generation were identified: a stratigraphically higher and less mature, Type II facies with HI (Hydrogen Index) values of > 350 mg HC /g TOC, and a stratigraphically lower and more mature, Type II/III facies with HI values of < 350 mg HC /g TOC. Both organic facies are considered likely sources of paraffinic-naphthenic-aromatic petroleum with variable amounts of gas based on the pyrolysis gas chromatography scheme of Horsfield (1989) (Fig1).

Bulk kinetic experiments have shown that predicted petroleum formation temperatures are closely similar within each of the facies but different between the facies, with onset (TR 10 %) temperatures of 136°C (lowest geological Tmax 151°C) for the type II facies and 144 °C (highest geological Tmax 170°C) for the type II/III facies. This corresponds approximately 630m difference in burial depth or delayed onset of petroleum generation by 5.75 My for a 3.3K/my heating rate.

Source rock characteristics will next be incorporated into a 2-D basin model, and consideration given as to how representative these characteristics are, regionally. The yields and compositions of petroleum charges will then be predicted in time and space, using in particular the Phase Kinetics approach (di Primio and Horsfield 2006) to analyze phase behaviour.

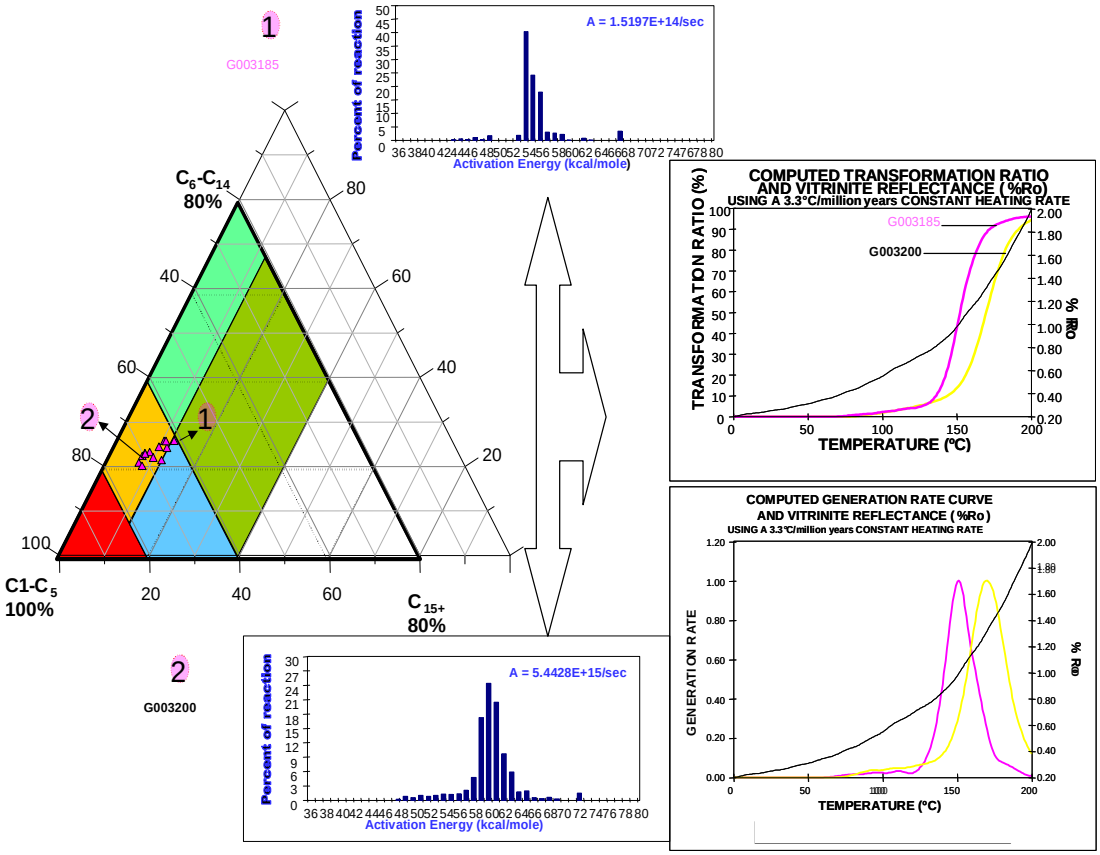

Figure 1. Ternary diagram after Horsfield (1989) based on n-alky chain length distribution and the onset and peak generation temperatures.

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