

Comparison of the molecular weight distribution of elements in the asphaltene fractions (A1, A2 and TC) of two crude oil by micro gel permeation chromatography coupled to high resolution ICP MS

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Asphaltene is a very complex matrix. This crude oil fraction contains the higher concentration in metals such as nickel and vanadium. Those metals are complexes by organic ligands containing nitrogen and sulfur. The knowledge of metal and sulfur distribution in asphaltenes and their sub-fractions (A1, A2 and TC) [1] can highly improve the understanding of the key parameters involved in the asphaltenes aggregation process and bring in the same time valuable geochemical information on the crude oil itself.

With this aim in mind, a microGPC analysis hyphenated with an ICP HR MS has been used to analyze sulfur, nickel, vanadium and lead in the fractions of two different oils from central America. Those results give a mapping of all these elements in function of the molecular weight of these complexes. The comparison of this mapping and the Ni/V profile is discussed.

References

- [1] Acevedo, S., et al., *Trapping of paraffin and other compounds by asphaltenes detected by laser desorption ionization-time of flight mass spectrometry (LDI-TOF MS): Role of A1 and A2 asphaltene fractions in this trapping*. Energy and Fuels, 2009. 23(2): p. 842-848.

