



## CHARACTERIZATION OF HYDROCARBON FRACTIONS IN PETROCHEMICAL SAMPLES BY AUTOMATED ON-LINE HPLC+HRGC- MS MULTIDIMENSIONAL SYSTEM

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Characterizations of petrochemical streams are used to predict properties and/or behaviour in processes or during application. Although density can give indicative data about crude oil aromaticity [1], more information can be obtained by a separation based on molecular properties of components in the sample. Nowadays, GCxGC [2] allows to obtain highly structured chromatograms of petrochemical samples based on separations along the distributions of volatility and polarity. However, GCxGC fails to give the systematic distribution of aromatic and naphthenic classes. The addition of a previous LC step has allowed a group-type separation of the sample into compound classes with an equal number of aromatic rings [3].

In this work, a new application of the patented TOTAD® Interface for on-line coupling HPLC+HRGC is presented. The interface coupling an HPLC to a HRGC in the KONIK K2 HPLC+HRGC system allows the direct separation of petroleum fractions (aliphatic hydrocarbon, mono-, di- and poly-aromatic series) without mix-up between them before their analysis by GC-MS or GC x GC-MS. The different hydrocarbon series were separated in first by HPLC using a NH<sub>2</sub> column and pentane, hexane or heptane as mobile phases. Afterwards, hydrocarbons were eluted by groups from the column and the fraction of interest was transferred to the GC-MS system. With the addition of the KONIK Robokrom HPLC Autosampler and the full control through the Konikrom® Software, the complete analysis can be easily automated and performed in few minutes, limiting the use of solvents while protecting sample integrity.

[1] J. G. Speight, *Handbook of Petroleum Analysis*, Wiley, New York, 2001

[2] J. B. Phillips and J. Venís; *J Chromatogr A* 856 (1999) 331

[3] R. Edam, J. Blomberg, H.-G. Janssen and P.J. Schoenmakers; *J Chromatogr A* 1086 (2005) 12