

Contribution of AMD-HPTLC-Fluorescence and UV Scanning Densitometry to the Characterization of Heavy Petroleum Products

C. Jarne^a, V.L. Cebolla^{a*}, L. Membrado^a, K. Le Mapihan^b, P. Giusti^c

^aInstituto de Carboquímica, CSIC, Zaragoza, Spain; *e-mail address: vcebolla@icb.csic.es, ^bCentre de Recherches de Solaize, France, ^cCentre de Recherches de Gonfreville, France

Poster presentation

Heavy petroleum cuts cover a wide range of products which consist of hundreds of compounds varying in molecular structure and size, polarity and functionality. Long-chained, linear and cyclic saturated hydrocarbons are also present in these products together with high-MW polyaromatic and heterocyclic structures. This presentation shows the high potential that HPTLC using Automated Multiple Development (AMD) has for the development of characterization methods for these kinds of products.

For a given heavy petroleum product, different schemes of AMD separation can be envisaged to obtain different information with increasingly levels of complexity. The adequate use of elution modes (sequential elution with solvents, refocalisation using isochratic elution, or solvent gradient elution), and plates of different stationary phases allows to obtain several levels of information:

- a simple or more complex Hydrocarbon type-analysis
- a distribution of aromatics according to their ring number
- a detailed, molecular-like separation.

Likewise, variation of gradient composition provides a fine-tuning in the separation of particular zones of a given chromatogram.

Densitometry using UV and fluorescence is used for determination of heteroaromatics. FDIC using berberine cation can be used for detecting and quantifying saturated compounds.

Examples are shown with standard molecules that models heavy products, and a real case.