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Characterization of crude oils fractions using combined chromatographic methods

Claudia Irina KONCSAG[a], Mariana POPESCU[b] , Cornelia BALBAE[b], Gabriela STANCIU[a] and Dana Cristina TONCU[a]

[a]*Ovidius University, Department of Chemical Engineering and Technology 124 Mamaia Blvd, 900527, Constanta, ROMANIA*

[b]*Rompetrol Quality Control, DJ226, Km.23, Navodari*

Abstract. A scheme of separations mostly chromatographic was performed in order to characterize the crude oils. These are characterized through their light and middle distillates, following the principle that the chemical character of the oil can be found in every fraction obtained from it. This scheme can serve as a sequence for fingerprinting spill oil pollution by analyzing the middle distillates and especially the persistent hydrocarbon, like PAHs, as markers. Three different crude oils: one heavy, one paraffinous light and a naphthenic one were studied. At first, the simulated distillation by GC chromatography was performed and the results were checked by the actual atmospheric distillation. The goal of the atmospheric distillation was primarily to obtain naphtha and narrow fractions of middle distillates. The composition of the naphtha was found by GC – PIANO method and then, the complete list of hydrocarbon found in middle distillates was obtained by GC-MS. Finally, the PAHs content in distillates was analyzed by HPLC method and conclusions appeared concerning some regularity in the PAHs distribution whatever the origin of the oil would be. Also, differences among different types of oil resulted.

Keywords: oil characterization, simulated distillation chromatography, GC-MS, HPLC

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