

ESDU SPA-M9-2

A study of deposit formation in a micro-bomb reactor (MBR): effect of residence time – Sept. 08 update

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A study of deposit formation in a micro-bomb reactor (MBR): effect of residence time

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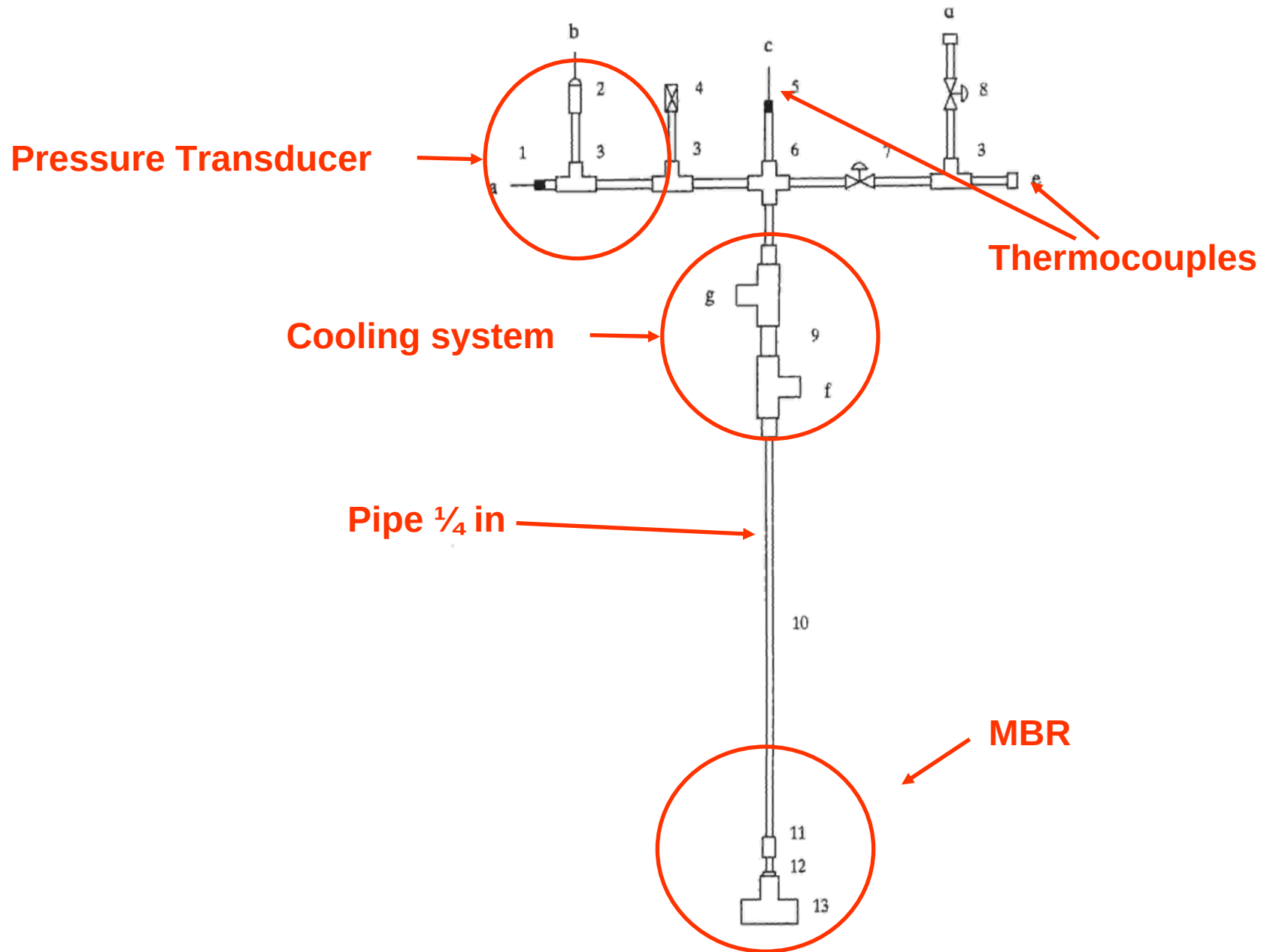
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Review

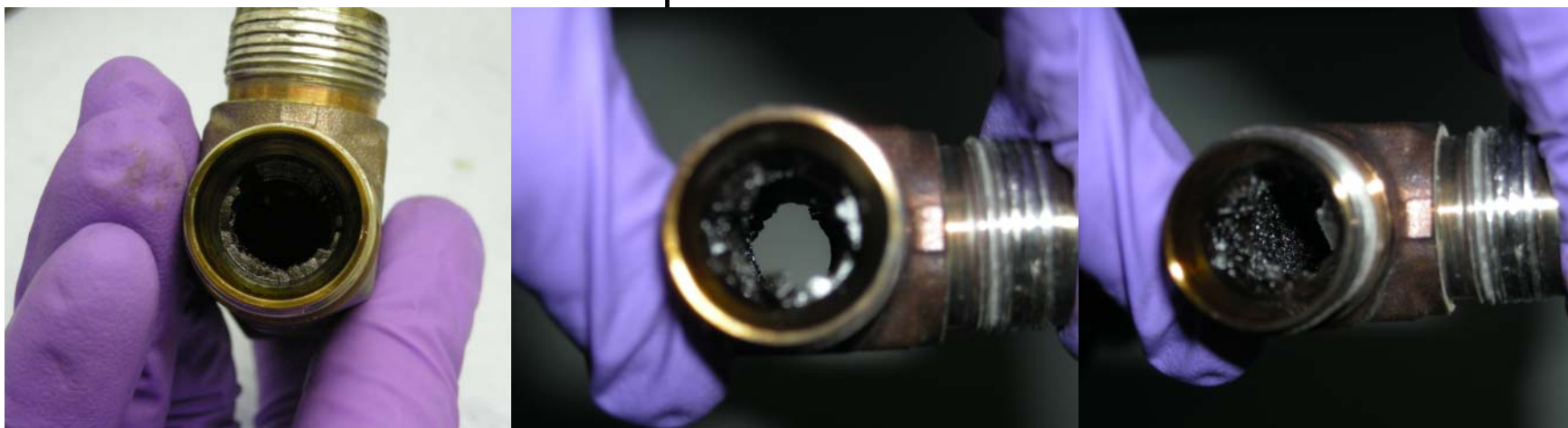
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Review

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- A set of runs were carried out in the first stage of this work at conditions resembling those of pre-heat trains in the oil refineries.
- More severe conditions (about 390 °C and 80 bar of N₂ pressure for 6:30 hours) have been used in order to evaluate the effect of the working parameters in the products recovered and to obtain deposited foulants for further characterisation in comparison with the feed material.



A method has been developed by combining the results obtained from different techniques (SEC, UVF, TGA etc) as all of them show some limitations due to the nature of the samples which are not completely soluble in any of the solvents used. There are similarities between the deposits obtained in lab scale and those from the oil refinery.

Contents

- Objectives of this study
- Characterisation of the liquid phase
- Characterisation of the deposits
- Conclusions
- Future work

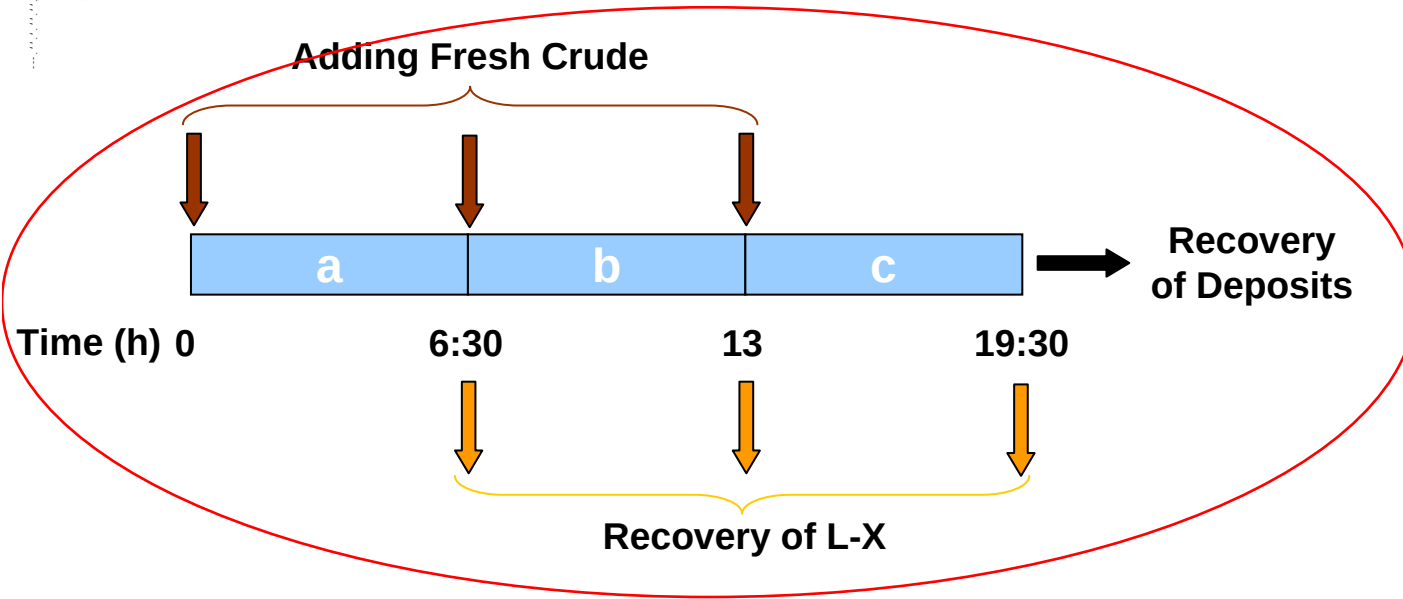
Objectives of the study

- Study of aging effect on liquid phase and deposited foulants.
- Investigation of deposition from heptane soluble as feed material.



Characterisation of the liquid phase

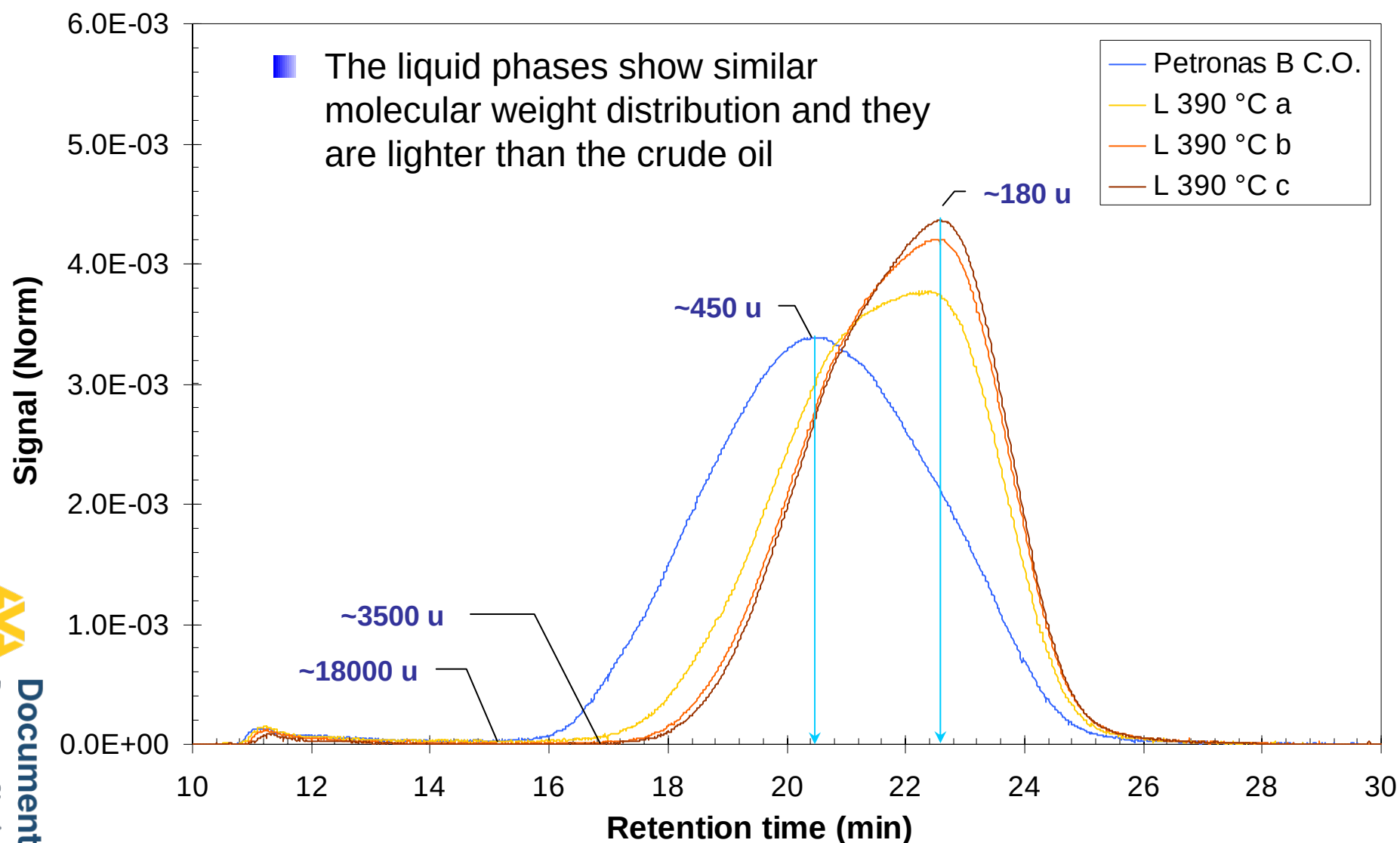
Long residence time runs - Deposits aging



Triple run

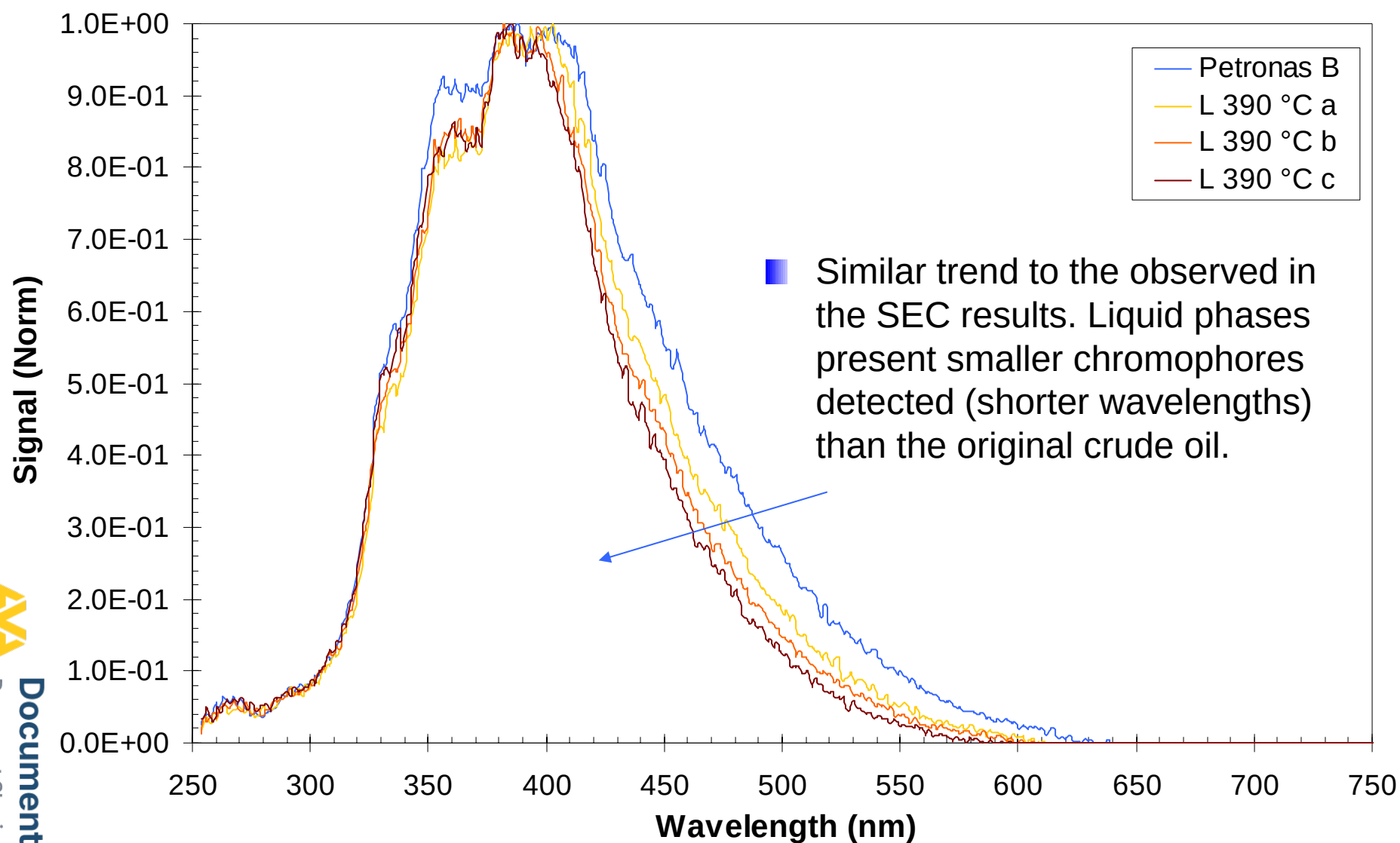
Triple Run (Pet. B 390 C 80 bar)

SEC of Crude B liquid phase Mixed-D column in NMP/CHCl₃ (6:1)



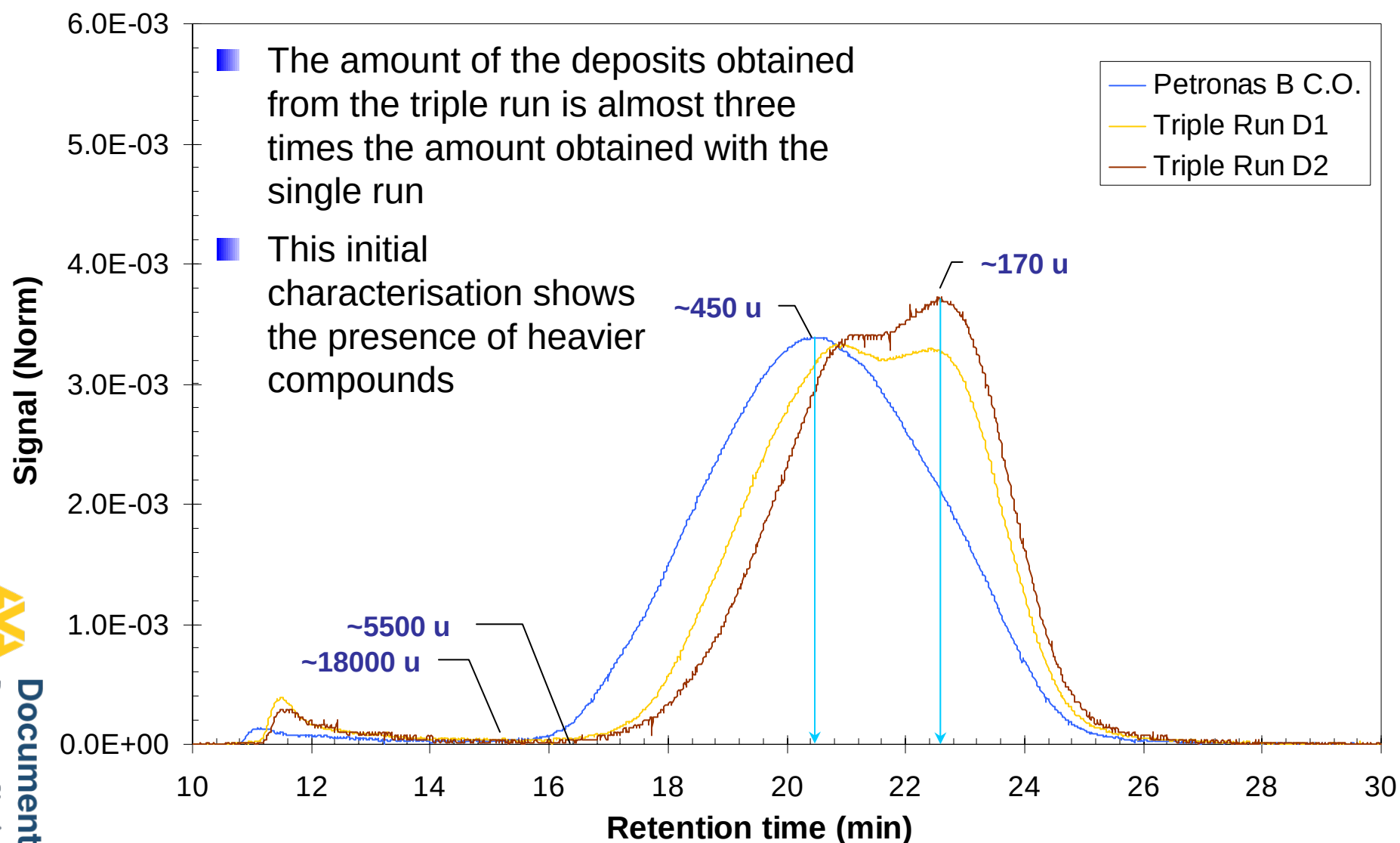
Triple Run (Pet. B 390 C 80 bar)

Synchronous UV-F spectra of Crude B liquid phase



Triple Run (Pet. B 390 C 80 bar)

SEC of Crude B Deposits Mixed-D column in NMP/CHCl₃ (6:1)



Triple Run (Pet. B 390 C 80 bar)

Synchronous UV-F spectra of Crude B Deposits

