

IPHC, this is 4 DEPARTEMENTS: DRHIM, DRS, DEPE and DSA

DSA, this is 4 TEAMS : REPSEM, LSMBO, SYNPA and CAMBAP

DSA

51 permanent staff + 42 non permanent staff

Reconnaissance et Procédés de Séparation Moléculaire



RePSeM

Production and separation processes
NPs analysis in environnement

Spectrométrie de Masse BioOrganique

Mass spectrometry and proteomic
Mass analytical strategies



LSMBO

Synthèse Pour l'Analyse



SynPA

Synthesis for analysis
Lanthanides NPs Synthesis spectrometric purpose

Chimie Analytique des Molécules BioActives et Pharmacognosie

Drug discovery and Analytical strategies
Hyphenations and separation strategies



CambaP



Christophe MARCIC



Eric MARCHIONI

IPHC staff involved in the project

Extraction

- Hot pressurized water
- Supercritical Fluids
- Deep eutectic solvents
- Conventional solvents

Separation

- Chromatographies
- Purification
- Concentration

CambaP



Detection

- Post-column derivatization
- Specific hyphenation
- Specific detectors

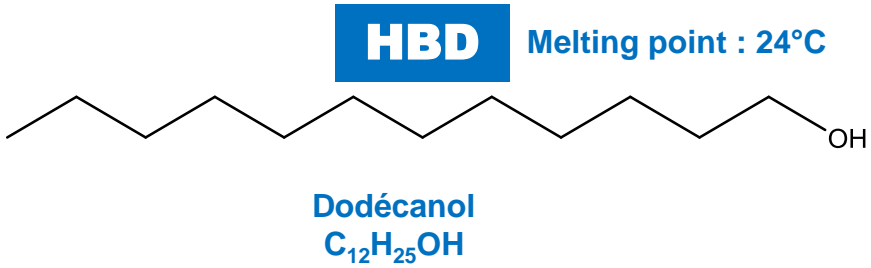
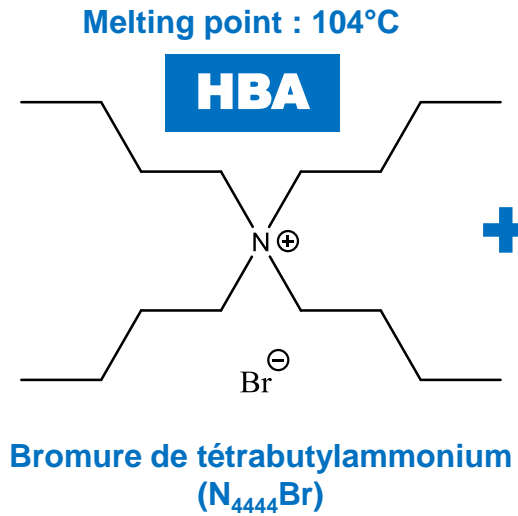
Extraction and analysis of volatile molecules



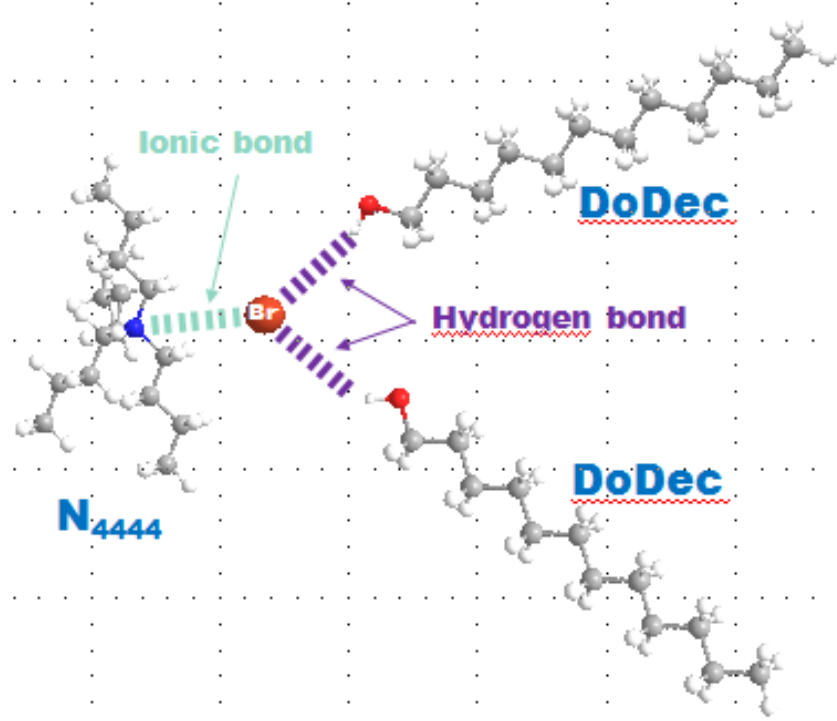
DES – HS – SDME

Deep Eutectic Solvent – HeadSpace – Single Drop MicroExtraction

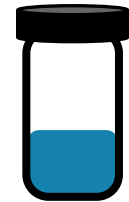
Terpenes in spices



80°C
2 h



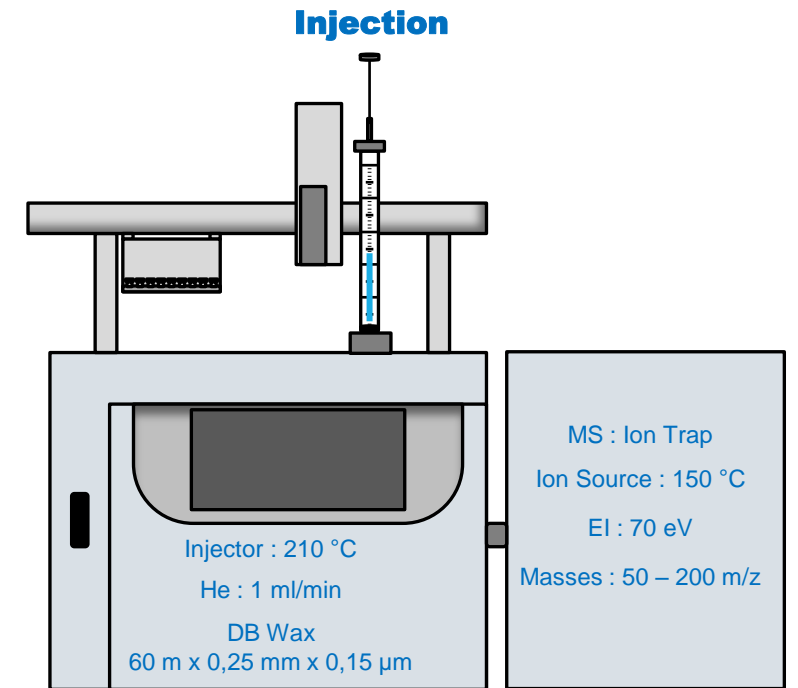
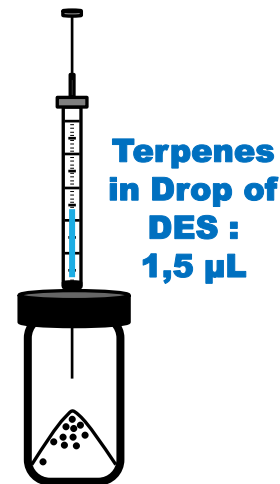
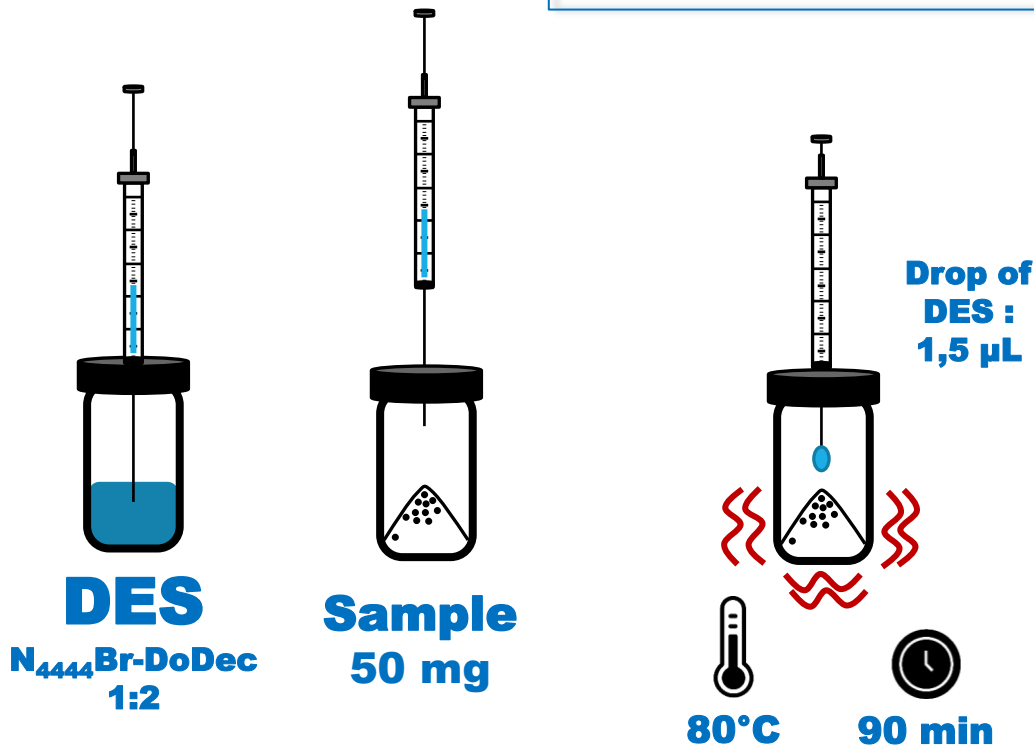
DES
N₄₄₄₄Br-DoDec
1:2



Liquid at room temperature

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DES – HS – SDME



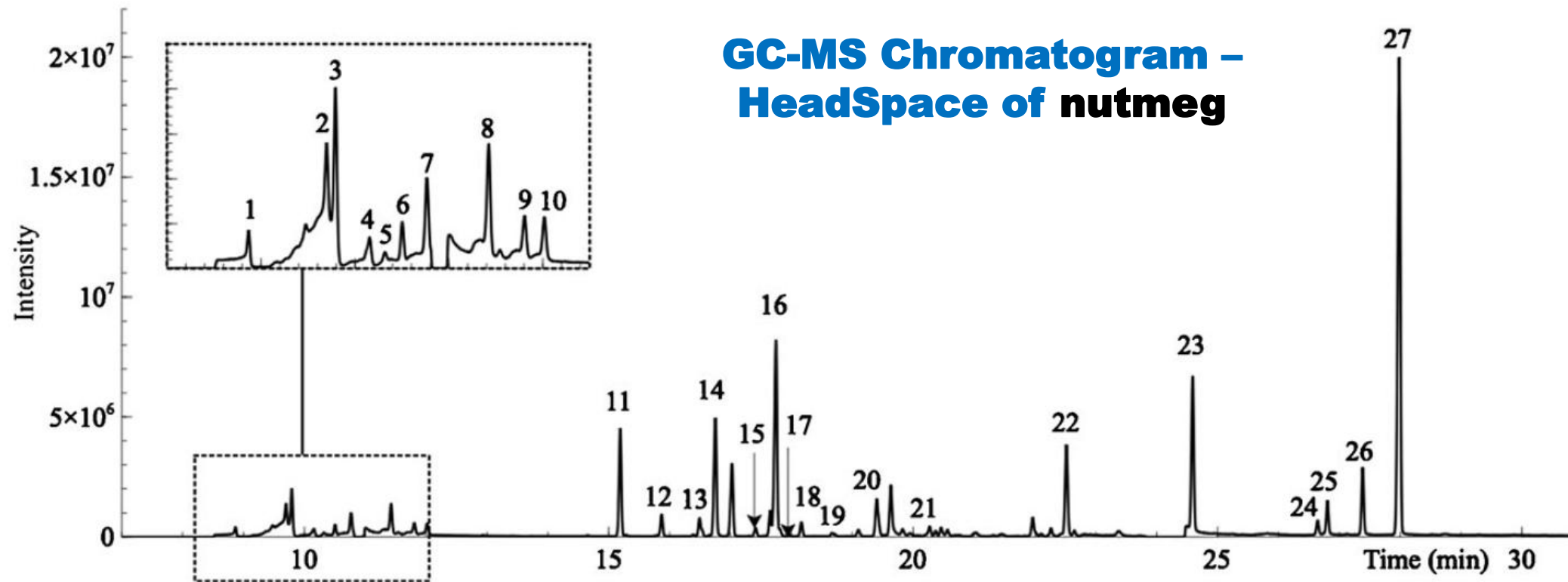
**Parameters optimized by
Design of Experiments**

- T° ext. (60 – 80 °C)
- Time ext. (5 – 30 min)
- Drop Vol. (0,5 – 2,5 μL)
- Sample Mass (50 – 100 mg)

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DES – HS – SDME

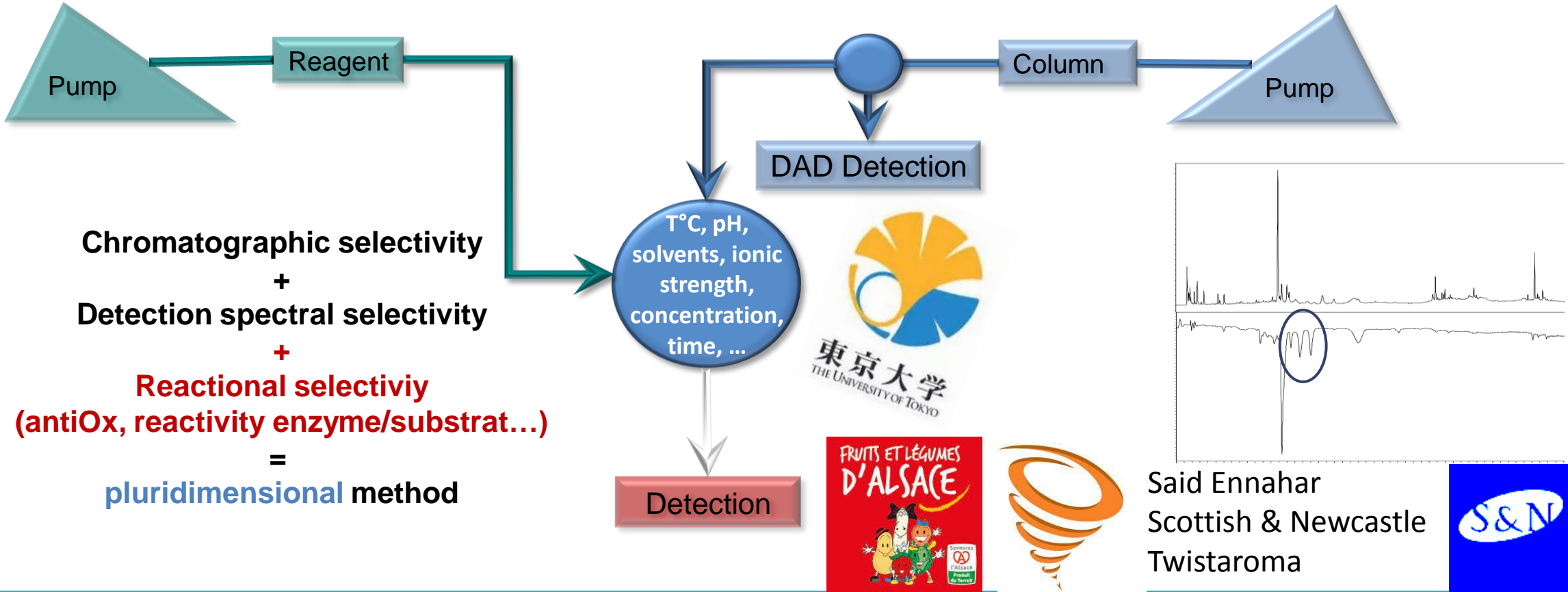
GC-MS Chromatogram – HeadSpace of nutmeg



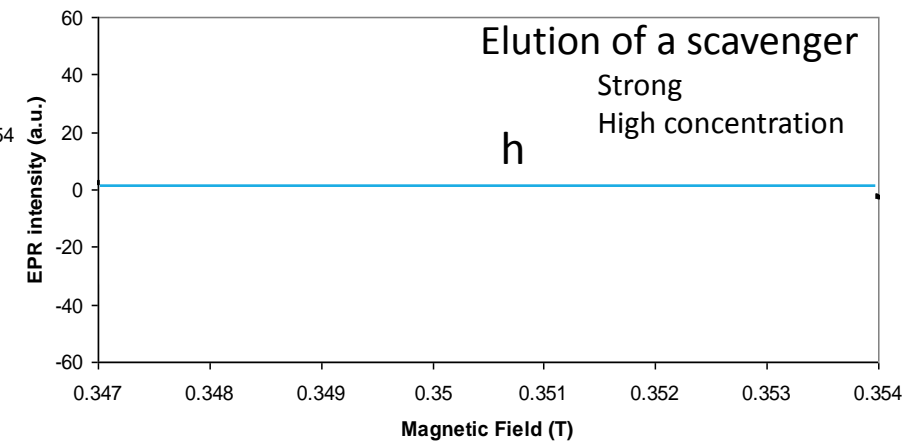
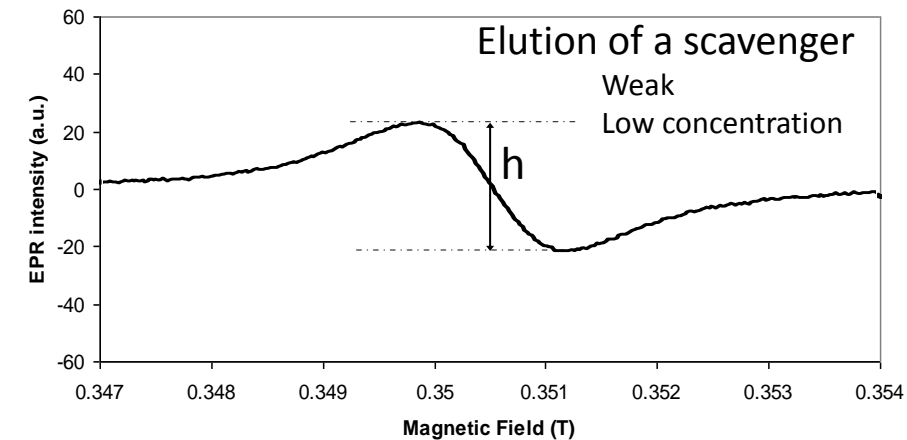
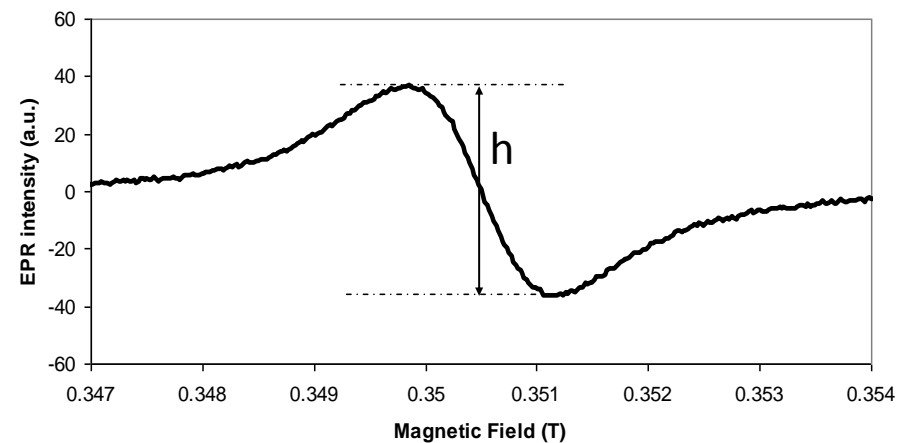
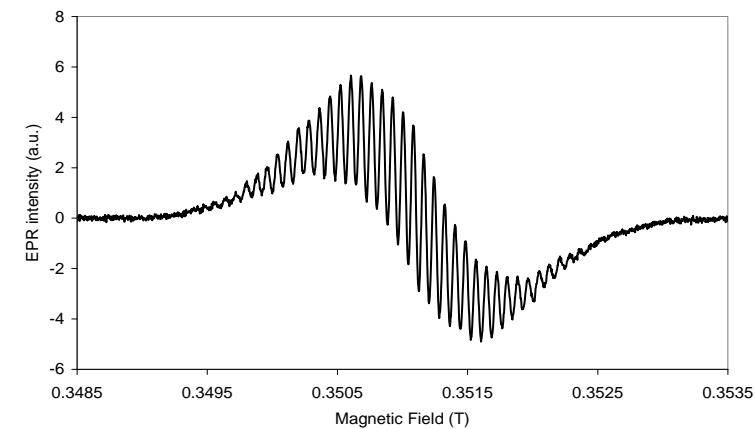
1. α Pinene
2. β Pinene
3. Sabinene
4. 3-Carene
5. α -Phellandrene
6. 4-Carene
7. Limonene
8. γ -Terpinene
9. p-Cymene
10. Terpinolene
11. trans-Sabinene hydrate
12. Copaene
13. Linalool
14. 1-Terpineol
15. Bornyl acetate
16. 4-Terpineol
17. 4-Terpineol acetate
18. β -Terpineol
19. (E)- β -Farnesene
20. α -Terpineol
21. trans-Piperitol
22. Safrole
23. Methyl eugenol
24. Eugenol
25. Isoeugenol methyl ether
26. Elemicin
27. Myristicine

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Description the device for potential bio(chemical) detection



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Drop of ESR signal :

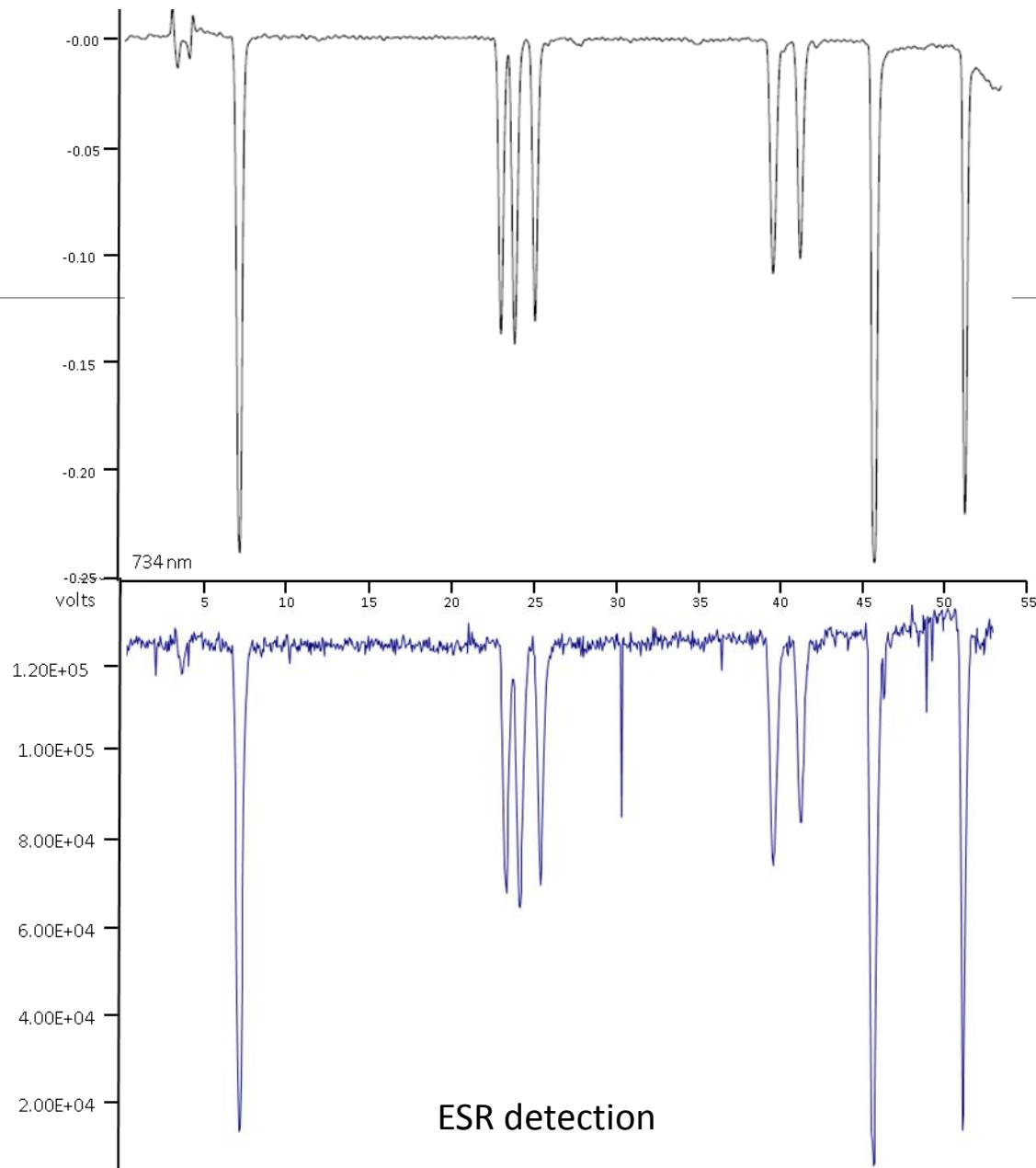
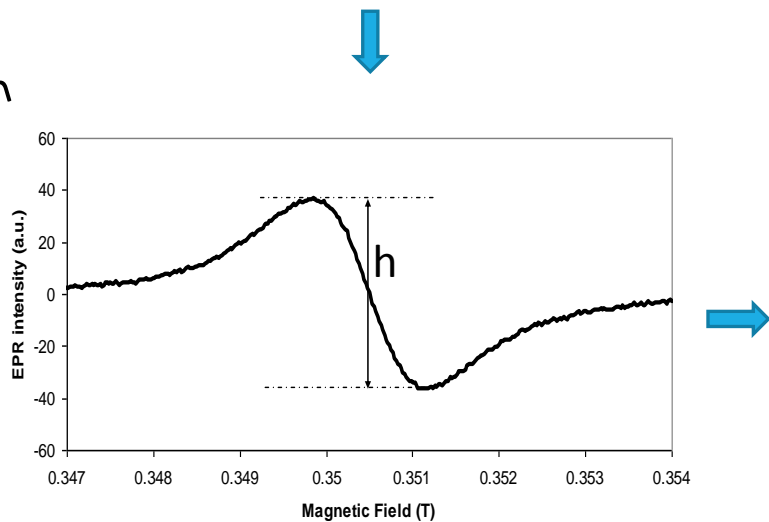
→ Reduction of radical concentration

→ Direct observation of the anti-free radical effect

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Quick scan analysis :
1 ESR μ -scan / 0,655 seconde
Sum of 3 μ -scans $\Delta I=3.h$
1 measuring point / 1,97 s

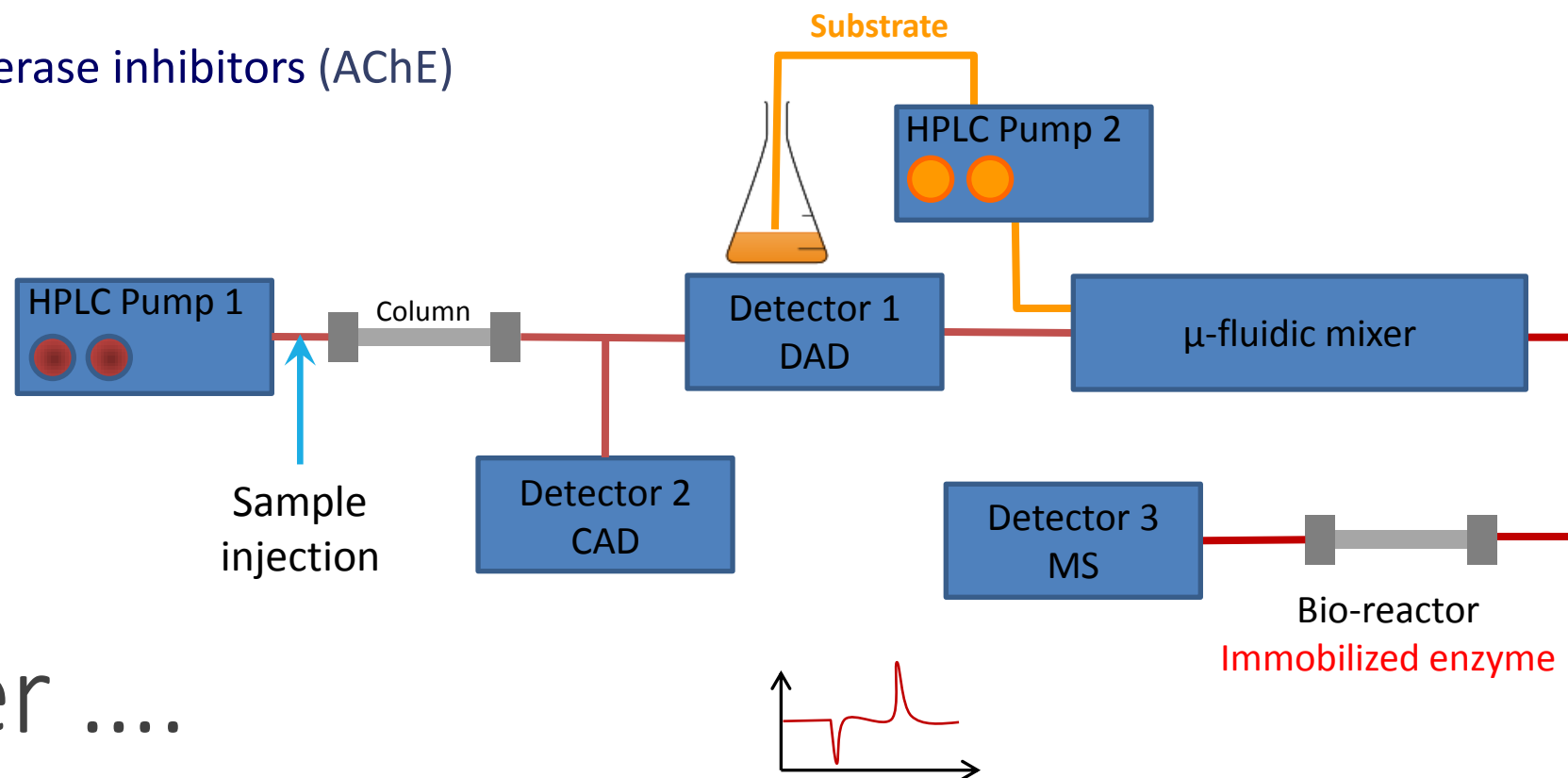
Conservation of spectral information



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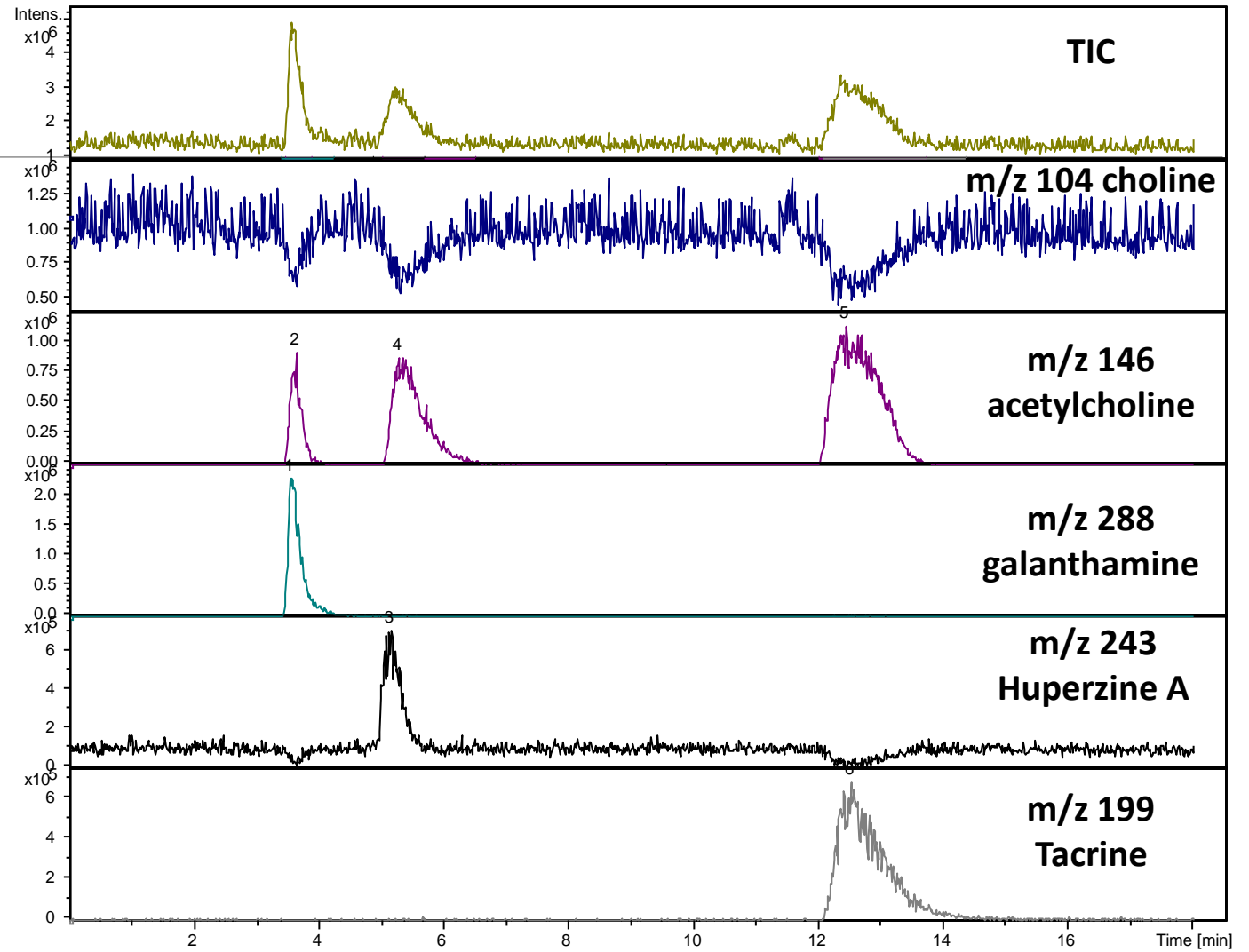
Example :

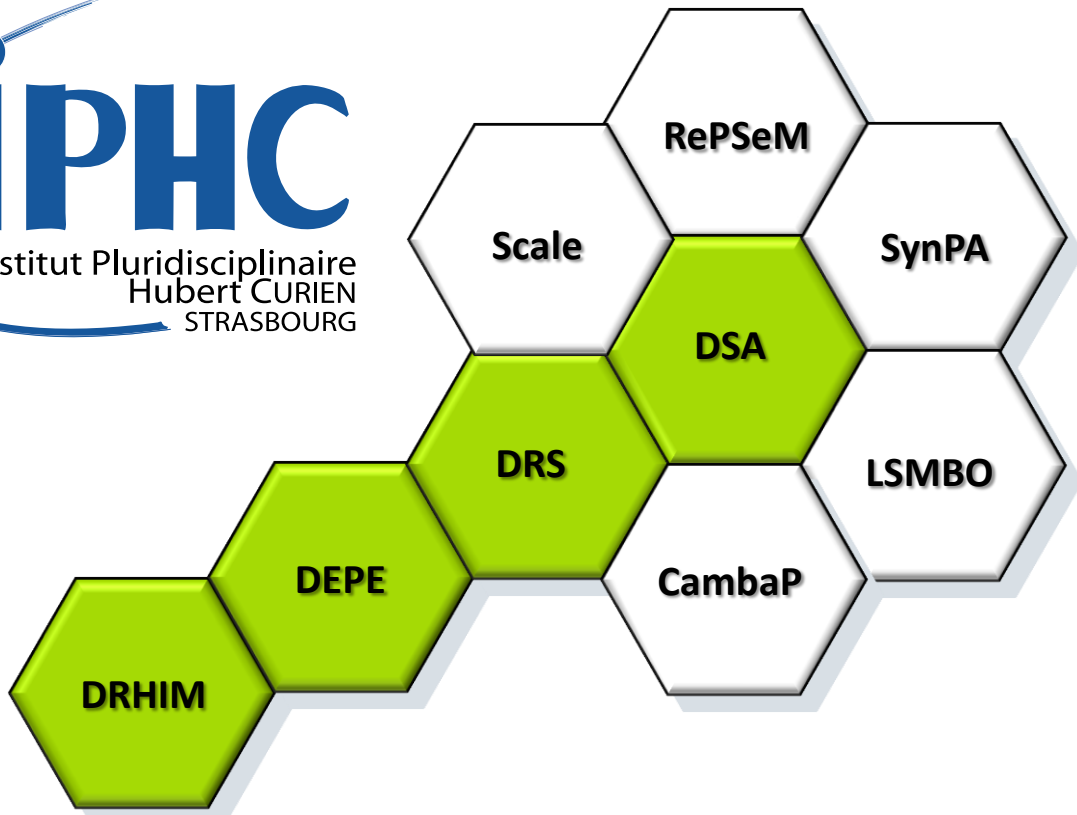
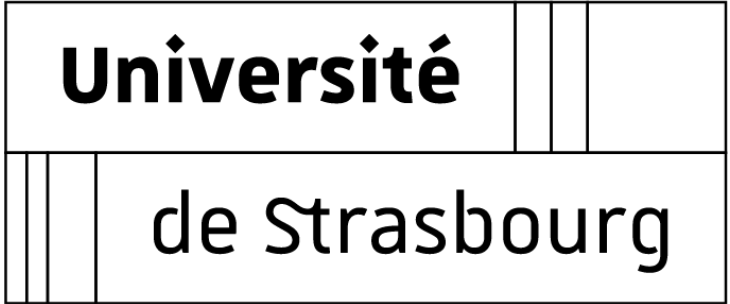
Search for acetylcholinesterase inhibitors (AChE)



Always further

IPHC staff involved in the project





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DSA, This will be 5 TEAMS: REPSEM, LSMBO, SYNPA, CAMBAP and SCALE