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INTRODUCTION

Selected Ion Flow Tube Mass Spectrometry (SIFT-MS) is a real-time volatile organic compounds (VOCs) analyser. It has been shown to be suitable for a diverse range of applications, and when used in combination with the GERSTEL MPS, enables very rapid sample headspace analysis. One analyte that can prove challenging by other methods is Formaldehyde, and this work was to evaluate measurement in personal care products – such as Shampoo.

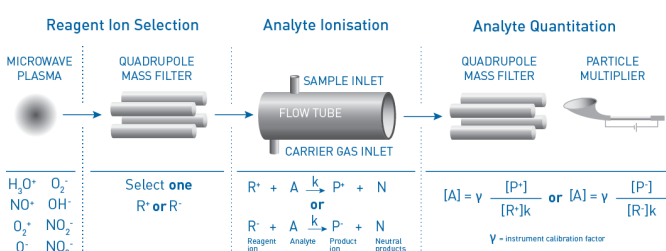


Figure 1 – Schematic of SIFT-MS technique

METHODS

Duplicate aliquots of shampoo (5g) were taken for headspace analysis at 60°C for 15 minutes. The plots below show the response for a range of locally purchased products for both Formaldehyde and Limonene which was also measured for comparison. [This Video](#) shows the speed of analysis and real-time response.

RESULTS

The responses observed on the SIFT-MS for Formaldehyde and Limonene, indicate a range of concentrations present in the different shampoo samples. The duplicate samples showed good agreement with each other.

Key to samples

- Sample A: Own brand Anti-Dandruff Shampoo
- Sample B: Premium Anti-Dandruff Shampoo
- Sample C: Premium Brand Shampoo
- Sample D: Supermarket Own-brand Shampoo
- Sample E: 2-in-1 Shampoo and Conditioner

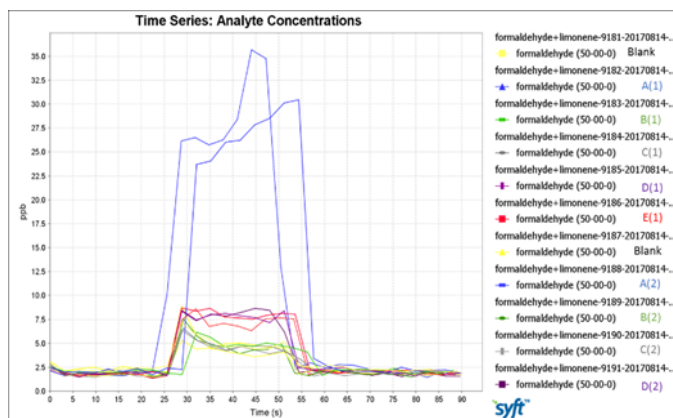


Figure 2 – Formaldehyde Content of Shampoos

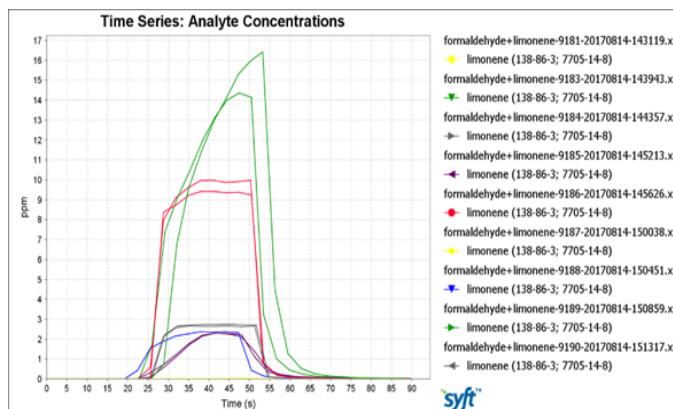


Figure 3 – Limonene Content of Shampoos

CONCLUSION

As the SIFT-MS measures concentrations per volume (ppbV, or µgcm⁻¹), in the headspace further experimental design would be required to provide accurate concentrations in the samples. However this work demonstrates the potential of SIFT-MS for this and similar applications.