

Analysis of aldehydes and ketones in laboratory atmosphere

Formaldehyde and acetaldehyde in laboratory atmosphere was analyzed after solid phase extraction. Fig.1 shows the sampling system. Fig.2 shows the procedure of derivatization by using 2,4-DNPH S10 Cartridge (SUPELCO). Fig.3 shows the chromatogram obtained by the procedure. Especially, acetone was detected in high concentration (383 ppbV).

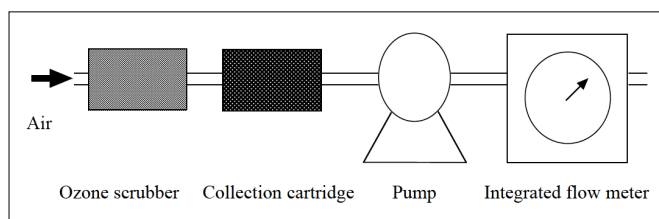


Fig.1 Overview of sample collection system

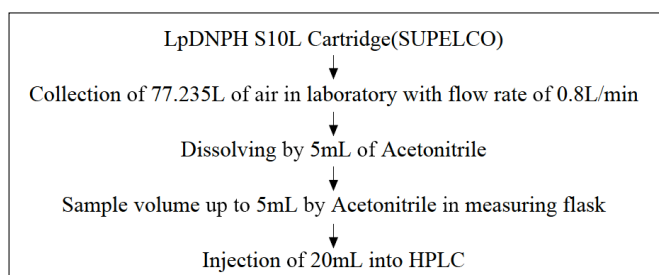


Fig.2 Procedure of collection and derivatization

Conditions:

Column: CrestPak C18S
 Eluent: A: H₂O/CH₃CN (60/30/10)
 B: H₂O/CH₃CH (40/60)

Time(min)	0	1	11	25	26
A(%)	100	100	0	0	100
B(%)	0	0	100	100	0

Wavelength: 360nm
 Flow rate: 1.5ml/min
 Column temp.: 40 degree celsius
 Injection volume: 20μL

Sample:

STD (0.15μg/ml each as carbonyl), Air in laboratory

- | | |
|--------------------|-------------------------------|
| 1. Formaldehyde | 10. Cyclohexanone |
| 2. Acetaldehyde | 11. Isovaleraldehyde |
| 3. Acetone | 12. Valeraldehyde |
| 4. Acrolain | 13. o-Tolualdehyde |
| 5. Propionaldehyde | 14. m-Tolualdehyde |
| 6. Crotonaldehyde | 15. p-Tolualdehyde |
| 7. 2-Butanone | 16. Hexaldehyde |
| 8. Butylaldehyde | 17. 2,5-Dimethyl-benzaldehyde |
| 9. Benzaldehyde | |

Keywords: 1.2,4-DNPH derivatives of aldehydes and ketones, 2.air in laboratory, 3.ODS, 4.UV, 5.ASTM D5197

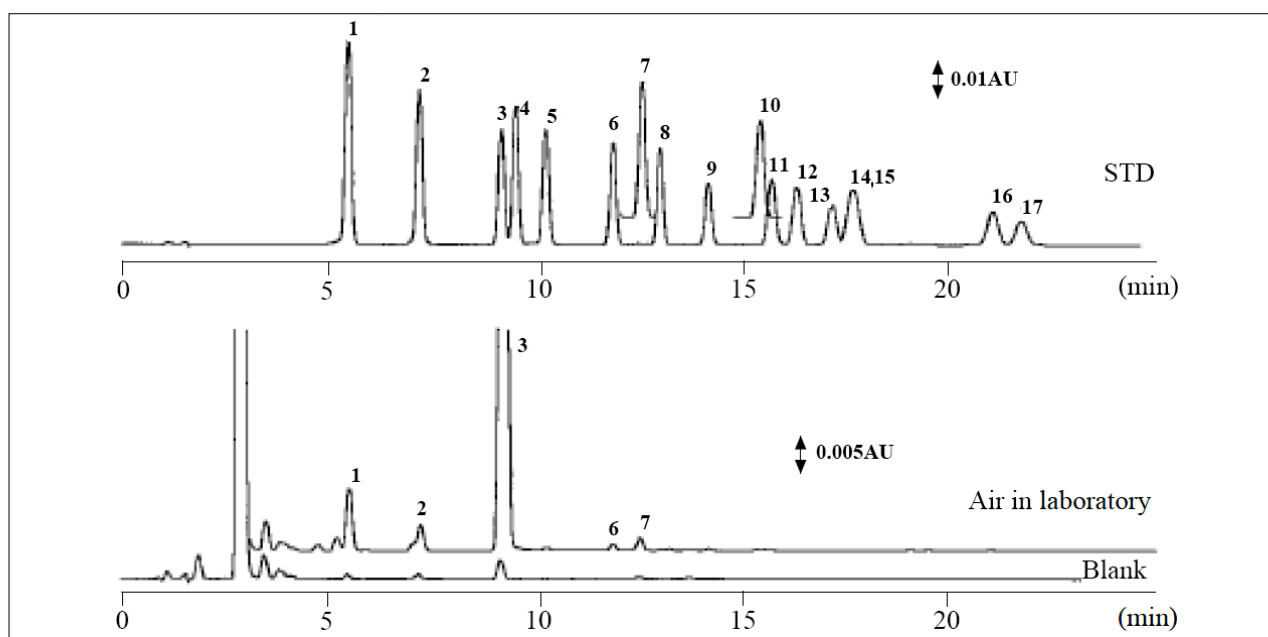


Fig.3 Chromatogram of STD sample and ambient air