

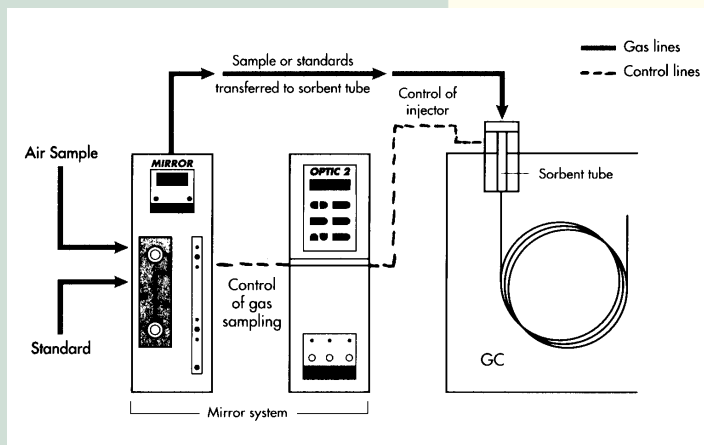
### INTRODUCTION

The MIRROR Sampling System has been developed for the automated in situ determination of airborne C<sub>2</sub> - C<sub>10</sub> volatile organic compounds (VOCs) by gas chromatography. The system uses a single sorbent tube in an injection head mounted in a GC to first adsorb and concentrate the analytes. Rapid temperature programming then follows to inject the VOCs into the GC for separation and analysis. The system is rugged and can be transported in a mobile laboratory for on site monitoring.

### OPERATION

- Concentrate analytes on the sorbent tube in the injector.
- Determine and work within the breakthrough volume for quantitative results.
- Re-direct gas flows.
- Program injector rapidly to inject the VOCs into the GC column.
- The re-directed flows flush the sampling system clean in the meantime.

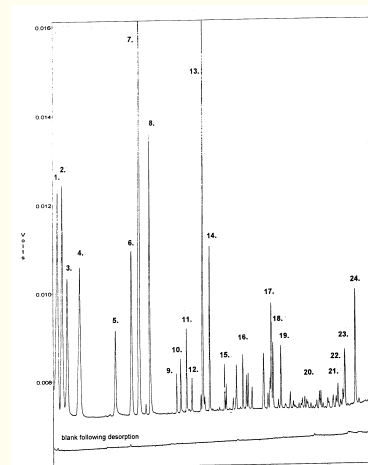
### SYSTEM OVERVIEW



### APPLICATION

The MIRROR Sampling system has been developed for the analysis of ozone precursors that are typically found at different concentration levels in different parts of the country. Experimentation has shown that to measure airborne C<sub>2</sub> - C<sub>10</sub> VOCs, about 600 ml of air needs to be sampled. This provides the concentration of analytes enabling ppt levels to be detected without breakthrough of the sorbent tube occurring.

### CHROMATOGRAMS

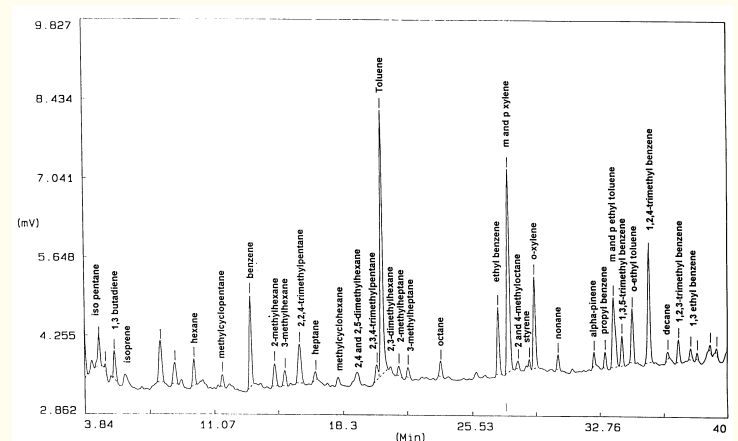


Analysis of C<sub>2</sub> - C<sub>6</sub>

50 m x 0.53 mm modified PLOT column

Temperature programme: 50 °C (3min), 6 °C/min, 195 °C (10 min)

1.Methane, 2.Ethane, 3.Ethene, 4.Propane, 5. Propene, 6.2-Methyl propane, 7.Ethyne, 8.n-Butane, 9.Trans-2-butene, 10.1-Butene, 11.Iso-butene, 12.Cis-2-butene, 13.2-Methyl butane, 14.n-Pentane 15.1,3-Butadiene, 16.Pentenes, 17.2-Methyl pentane, 18.3-Methyl pentane, 19.n-Hexane, 20.Methyl hexanes and hexenes, 21.Heptane, 22.Methyl cyclopentane, 23. Benzene, 24.Toluene



Analysis of C<sub>5</sub> - C<sub>10</sub>

60 m x 0.53 mm RTX1 column

Temperature programme: 5 °C, 3 °C/min, 115 °C, 15 °C/min, 220 °C

### CONCLUSION

- Rapid, high resolution analysis
- In situ determinations, saving time and consumables
- Continuous, unattended monitoring
- Reproducible, quantitative results
- Compatible with most GCs
- Enables detection to ppt levels