

The Thermal Desorption of Chocolate Flavoured Powder using Difficult Matrix Introduction (DMI)

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- *Direct desorption of analytes from sample matrix to column*
- *Eliminates the need for sample preparation*
- *May be automated using the Focus DTD*

Instrumentation

- ATASGL Optic 2-200 programmable injector
- Agilent 5890 gas chromatograph with 5971 mass selective detector
- SGE CO₂ cryotrap

Principles

- Place 0.5-1 mg of cocoa powder in a microvial, place in fritted liner in injector and start run
- Liner is firstly swept and the cryotrap is turned-on
- The analytes are thermally desorbed under static flow conditions
- The analytes are swept onto the column with a small split flow and trapped
- The cryotrap is turned off and the separation and analysis is performed

Chromatograms

Abundance

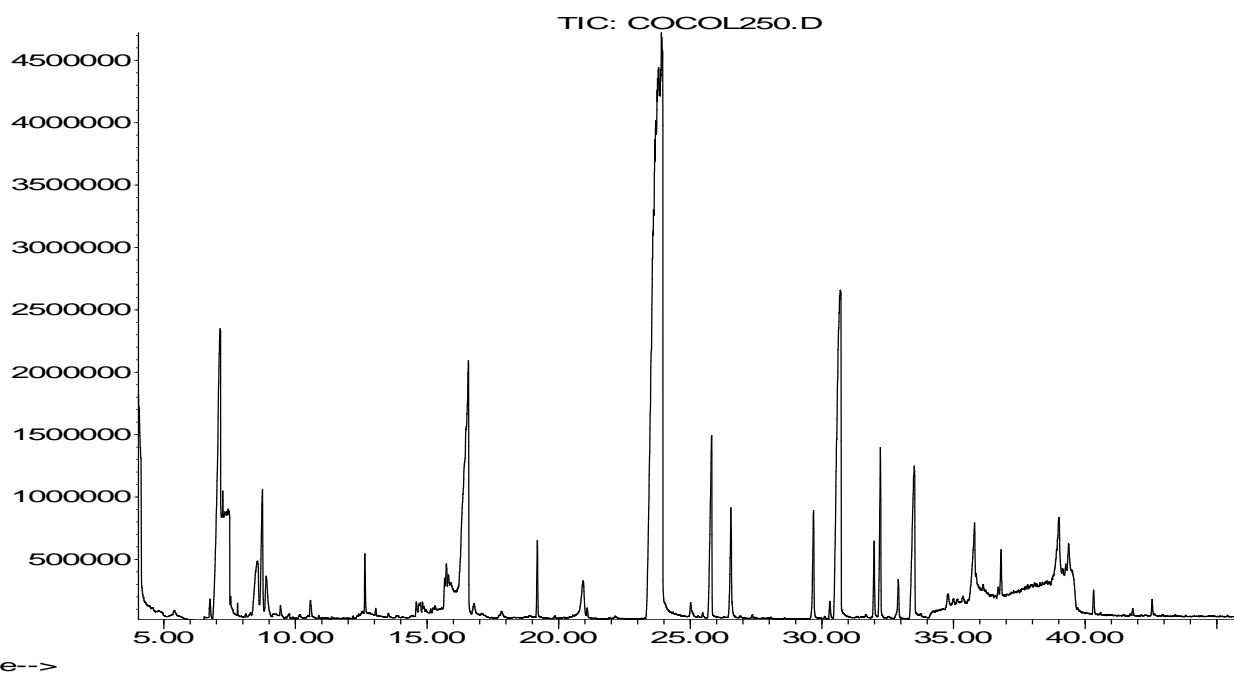


Figure: 1 mg chocolate flavoured powder desorbed at 250 °C

Appendix

Optic Parameters:

Liner: ATASGL Fritted
Microvial: 6 mm
Mode: Expert
Gas Flows: Vent: 75 ml/min
Split: 10 ml/min
Initial temperature: 35 °C
Isothermal time: 1 min
Ramp rate: 16 °C/s
Final temperature: 250 °C
End time: 46 mins
Sweep pressure: 8 psi
Sweep time: 0.5 mins
Split open time: 0.5 mins
Desorption pressure: 0 psi
Desorption time: 2.5 mins
Transfer pressure: 7.4 psi
Transfer time: 2 mins
Initial pressure: 7.4 psi
Final pressure: 19.1 psi

Cryotrap Parameters:

Cryo on: 0.25 mins
Cryo off: 4 mins

GC Parameters:

Column: HP5-MS 30m x 0.25mm i.d. x 0.25um film
Initial temperature: 45 °C
Initial time: 5 mins
Ramp rate: 5 °C/min
Final temperature: 250 °C

MS Parameters:

Acquisition mode: Scan
Low mass: 30 m/z
High mass: 280 m/z
Sampling number: 2
Threshold: 500
Transfer line: 280 °C
Solvent delay: 4 mins