FOCUS-INJECTION DEVICE FOR "ONE POT/ONE STEP" CHROMATOGRAPHY

Innovative process to extract and functionalise volatile and/or refractory molecules from a solid, liquid or gas sample and then to inject them into a chromatograph

Technological advantages

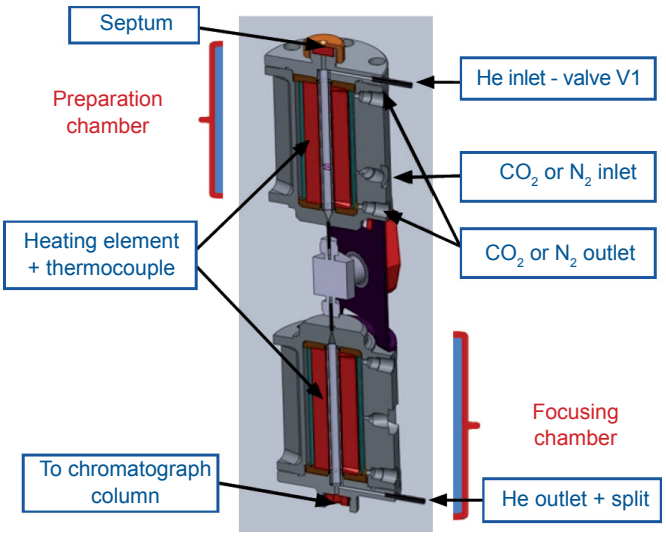
A simple, high-performance and innovative system

Injector has two separate parts which can work independently:
- The preparation chamber, where the sample is transformed: extraction, functionalisation and vaporisation of target molecules (one pot/one step)
- The focusing chamber: condensation, concentration and injection of target molecules when ready in the chromatograph

Temperature controls and monitoring in both compartments
Pressure controls and measuring. Possible to create vacuum inside the reactors via a primary vacuum pump
Use of thermal desorption at high temperature in both compartments
No transfer lines

Technical characteristics

Sample volume < 0.5ml
Sample weight: 0.5 to 2g
Ambient temperature raised to 600°C in less than 15s
Lowering of temperature from 600°C to 75°C in less than 15s



Schematic diagram

Overview of invention

The targeted organic molecules are extracted from the solid sample in the preparation chamber via high-temperature thermal desorption, and are then functionalised and vaporised directly. They are then conveyed via helium flow to the focusing chamber, where they are condensed, desorbed and injected into the chromatograph.

Potential applications

Space: in situ chemical analysis of trace compounds in extraterrestrial environments such as the surface of Mars, nucleus of a comet, etc.

Non-space applications:

- Food industry, pharmaceutics, cosmetics (perfumes, etc.)
- Agronomic and petrochemical industries
- Research laboratories: analysis of trace compounds

Commercial benefits

Optimised technology

Unique product, compatible with injection systems for both laboratory and field chromatographs (all brands)
System can be used directly as chromatograph injector
Adapted to difficult, messy matrices

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Patented invention, available under license

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For more information

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