

# PRIMOSAMP & PRIMOSENS

## GAS SAMPLING & ANALYSIS ON-THE-GO

### + WHAT ARE PRIMOSAMP & PRIMOSENS?

Since 1950, gas chromatography remains the top choice among laboratory techniques for complex gas-mixture analysis. Until now, these systems could be as large as a table.

Leti, a specialist in microtechnologies, is introducing two highly miniaturized and low-cost gas sampling and analysis lab-on-chip systems that fit in the hand:

- **PRIMOSAMP:** samples gas into a removable cartridge. User can then inject the sample in any gas chromatograph.
- **PRIMOSENS:** samples gas into a removable cartridge and performs a gas chromatography analysis.

### + APPLICATIONS

- Air-quality and environmental monitoring
- Defense and security
- Process monitoring
- Breath analysis
- Protecting workers from breathing dangerous gas
- Automotive

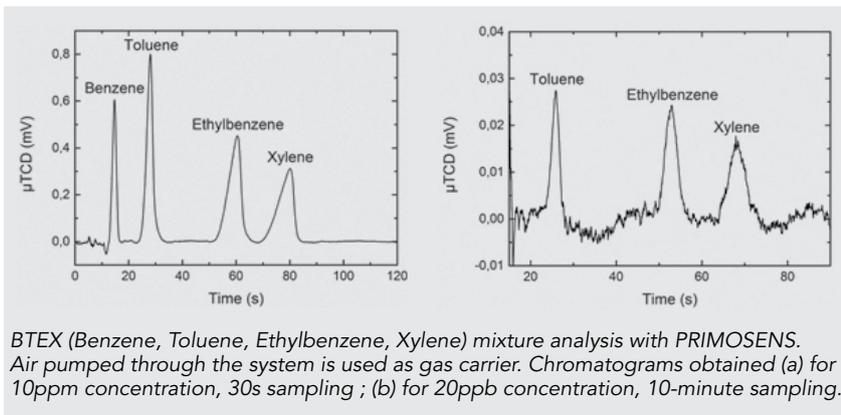
## + WHAT'S NEW?

PRIMOSAMP and PRIMOSENS are based on several innovations:

- **Low-cost solution:** cost divided by 10 due to collective fabrication
- **Low-power solution:** lower thermal capacity. Battery powered, both devices require 100x less energy than conventional gas chromatography systems
- **Easy to use:** no gas bottle needed, meaning no maintenance required
- **Handheld device:** highly miniaturized with same performance compared to existing systems
- **Performance:** lower sampling volume and detection in the ppb range

Leti's PRIMO devices leverage miniaturized silicon technology bricks, such as micro-preconcentrators, micro-valves, micro-columns and micro-detectors.

- **PRIMOSAMP** includes a Leti micro-preconcentrator chip, a 12V battery and a commercial miniaturized gas pump
- **PRIMOSENS** includes a Leti micro-preconcentrator and micro-thermal conductivity detector ( $\mu$ TCD), as well as a 12V battery, a commercial miniaturized gas pump and a gas chromatography column



BTEX (Benzene, Toluene, Ethylbenzene, Xylene) mixture analysis with PRIMOSENS. Air pumped through the system is used as gas carrier. Chromatograms obtained (a) for 10ppm concentration, 30s sampling ; (b) for 20ppb concentration, 10-minute sampling.

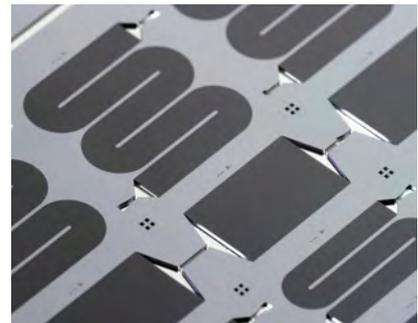
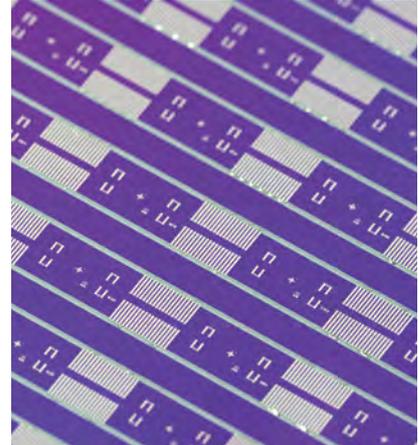
## + WHAT'S NEXT?

Leti's team continues working on the PRIMO technology by:

- Investigating new healthcare applications: breath sampling and analysis
- Developing an embedded recognition algorithm and new absorbent material for pre-concentration
- Studying the potential use of this technology beyond the lab, for the high-end consumer market

## KEY FACTS:

- 4 patents



## INTERESTED IN THIS TECHNOLOGY?

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