

# **Kore Overview 2013**

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Kore Technology Ltd.

# Kore Technology Ltd: Brief History

- **1982:** Cambridge Mass Spectrometry: a Cambridge Consultants 'Spin Off' formed to sell a TOF-MS-based Laser Ionisation Mass Analyser (LIMA)
- **1987:** CMS Purchased by Kratos Analytical, Time-of-Flight SIMS instrument developed with LIMA
- **1990:** Kratos bought by Shimadzu
- **1992:** Kore Technology Ltd. was formed as an independent company, owned and funded mostly by its staff, when the core of engineers at CMS decided that they did not wish to transfer with CMS products to Kratos in Manchester as part of a cost cutting exercise.
- **1993:** Kore begins development of a novel portable TOF MS
- **1995:** Kore begins development of a compact TOF-SIMS
- **2003:** Kore begins to develop novel PTR-TOF-MS products.
- **2007:** Kore begins development of a novel portable GC-TOFMS
- **2010:** New 4GHz TDC developed
- **2013:** PREFICS - Pre concentrator with Fast Integrated Chromatographic Separation

Kore has traded successfully for 21 years. We purchased a new 4000sq ft building in 2002 in Ely. We currently have no borrowings and have an annual turnover of over €1.2M

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# Kore Product Overview

Kore offers compact, portable, bench-top and add-on instrumentation for high sensitivity gas and materials analysis in the field or laboratory, based upon our versatile platform technologies in time-of-flight mass spectrometry.

We provide analytical instruments to assess environments for threats to our health and safety, and for materials and chemistry research.

Our product offerings will be discussed in the following slides.

# Portable Gas analysis



MS-200 is a portable, battery powered membrane inlet time-of-flight mass spectrometer for Volatile Organic Contaminants (VOCs) gas analysis.

Sales of the MS200 have been dispersed over many applications with no predominant area including:

- Remediation/landfill site screening/air/soil analysis/waste water
- air quality research/on-board air quality in space vehicles, automobiles
- Industrial hygiene
- security
- Fire and crime scene investigations
- Anthropology research-farm animal waste disposal/ primates
- educational
- oil/gas exploration



- **Portable mass spectrometry development project**

- GC/TOF-MS developed with UK Defence Science and Technology Laboratories funding.
- Aimed at emergency response and security market.
- GC is our own design – it is a micro GC with a typical start-to-finish time of 1-2 minutes
- Instrument designed for use with 3 interchangeable front ends:
  - Trap tube desorber
  - Swab desorber
  - Solid Phase Micro Extraction (SPME)
- Improved Mass Spec 'engine' (sensitivity) compared to MS200

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# Fast High Sensitivity Gas Monitoring



A Proton Transfer Reaction TOFMS for fast real-time high sensitivity analysis of VOCs in air. PTR sources selectively ionise VOCs from atmospheric pressure gas streams without ionising the major constituents of air. Therefore good at detecting trace levels of VOCs in complex chemical environments.

PTR-TOFMS is used in atmospheric chemistry, food and flavour science, environmental research and trace gas analysis. Medical breath analysis research is an increasingly important field. Similarly the detection and identification of air-borne organic contaminants in semiconductor fabrication (FAB) plants is a new area of interest.

The need to detect VOCs in low concentrations is also necessitated by EU legislation which has imposed limits on industrial VOC emissions.

We can offer a ruggedised transportable version of this instrument.

The same TOFMS used for PTR can also be potentially used for liquid analysis of medical items such as serum or urine.



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# Fast High Sensitivity Process Gas Monitoring



The Kore Fast Gas Analyser is a compact bench-top TOFMS providing rapid and sensitive gas analysis with the ability to produce stable long-term measurements of the constituents of gases at atmospheric pressures. The equipment is suited to process monitoring as well as catalysis studies and reaction kinetics research.

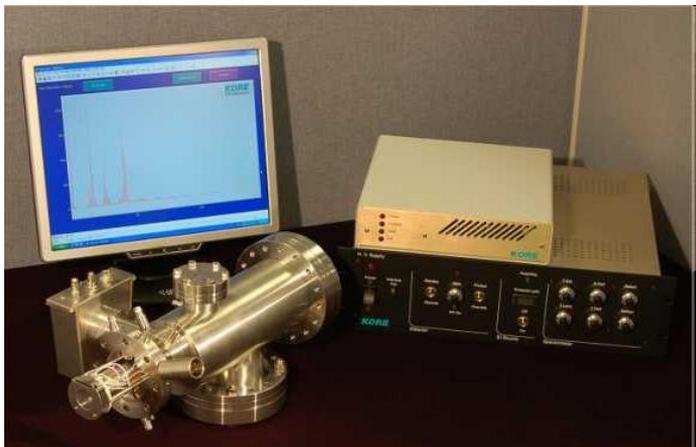


The Kore rack-mounted high mass resolution (>5000 M/δM FWHM) TOFMS instrument is a process gas analyser optimised to analyse the components in gases from furnaces in which combustion or pyrolysis occurs. High mass resolution is required to resolve process gases such as CO, CO<sub>2</sub>, N<sub>2</sub>, H<sub>2</sub>S and N<sub>2</sub>O as distinct peaks in the presence of other combustion gases. A dual inlet system to the TOF-MS is provided with a heated capillary for the process gases and a permeable membrane concentrator for VOCs that originate from the pyrolysis.

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# Gas Kinetics Chemistry



The Mini TOF-MS is a compact, add-on time-of-flight mass analyser used for gas kinetics studies in the detection and identification of radicals and reaction intermediates formed in experiments involving laser-induced gas-phase chemical reactions and laser ablation on solid samples followed by radical reactions with acceptor gases. For experiments where an ionising laser is not available, an electron impact ionisation source is fitted to ionise neutral atoms and molecules for trace gas detection.

The flexible ionisation source arrangement, as well as the ability to analyse reactions in a controlled atmosphere, makes the Kore Mini TOF-MS an ideal analyser for studying the kinetics of chemical reactions for climate and atmospheric science, as well as catalysis research.



The Gas TOF-MS system is designed to add-on to experimental systems to provide mass analysis of a molecular gas stream. The mass spectrometer is used to characterise the masses and distribution of metal clusters produced in nanoscience experiments.

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# Surface Analysis



SurfaceSeer is a compact affordable TOF-SIMS designed for ease of use and speed of data acquisition. All the spectrometer tuning has been pre-set in the electronics, so that the surface chemistry of insulating, metals and semiconductor samples can be determined quickly and efficiently.

# Surface Analysis-Add-ons



TOFSIMS add-ons based upon our R500 time-of-flight mass analyser with other components generally incorporated into "Do It Yourself" system builds for researchers aiming for a cost-effective route to obtain an instrument tailored to their particular requirements.