Hiden CATLAB

Integrated Microreactor-Mass Spectrometer for Reaction Testing, TPD/R/O and Pulse Chemisorption
CATLAB Modules

QGA Gas Analyser
Microreactor
Temperature and Gas Control Unit
**Standard CATLAB Layout**

- **Module 2**: Mass Spectrometer
- **Module 1**: Microreactor and TCU/GCU
CATLAB Schematic
CATLAB Options

- Corrosion resistant upgrade - includes upgrade of one gas flow line and corrosive gas resistant sample line seals, and a gas dilution/purge valve mass spectrometer pumping system.
- Additional corrosion resistant feed lines if required.
- Additional 4 channel gas control unit integrated to provide 8 stream gas selection in total.
- Option to choose the maximum flow of each MFCs.
- Vapour Generation (gives vapour pressure equivalent to max liquid temperature ~30°C). Other options available for higher flow rates.
- 300 amu mass range option. Mass range to 1000 amu available for specialised applications
QIC Series Gas Analysers

- 200 amu mass range, dual Faraday/ Electron Multiplier detector.
- Detection capability from 100 % to 0.1 ppm.
- Fast scan speeds of 100 amu/s.
- < 500 ms response time to changes in gas concentrations.
- Low dead volume, flexible heated inlet capillary for fast response to gases and vapours.
- Soft ionisation for analysis of complex mixtures and organics.
- Can be used as a stand-alone gas analysis system or in combination with other equipment i.e. Thermal Analysis.
CATLAB Control Software

- Control of Mass Spectrometer, Temperature and Gas Flows in one software package
Temperature Control

- Multi-stage temperature ramps
Gas Mixing Control

- MFC Gas Mix Library Editor
- Gas Mix Calculator
Gas Mixing Control

- Gas switching controlled by either temperature or time
MS Analysis Control

- Optimised multistage analysis - configure different analysis for different parts of the experiment
Mass Spectrometer Control

- MID Scan setup for known species
- Automatic overlap removal
Mass Spectrometer Control

- Multiple Bar scans can be configured for optimised sampling of unknowns
MS Data Display

- Data plotted with x-axis as time or temperature
MS Data Display

- 3D Bar Graph mode for easy identification of bar mode trends
Data Analysis

- Peak fitting analysis routines
- Integrated area
- Baseline subtraction
Pulse Chemisorption

- Injection of single gases or multiple reactants
Pulse Chemisorption Quantification

- Uptake measurements
- Dispersion calculation
- Metal surface area
- Pulse Adsorption Isotherm
Summary

• Integrated microreactor and mass spectrometer
• Both microreactor and mass spectrometer manufactured by Hiden Analytical
• Single integrated software package to control MS and microreactor
• Ideal for catalyst characterisation and reaction testing
• Designed for optimum mass spectrometer performance
Selected Academic References


Selected CATLAB Users

- Johnson Matthey
- Texas A&M University
- Hong Kong University
- Cambridge University
- Bayreuth University
- Research Complex at Harwell
- Sao Paolo University
- Bulgarian Academy of Sciences
- Université Catholique de Louvain
- Kunming University
- ETH Zurich
- PDVSA

Johnson Matthey
The University of Hong Kong

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The Hiden website is an excellent resource with product pages, brochures, catalogues, product pages with some application notes, presentation and other information.

Contact +44 1925 445225 for direct support.