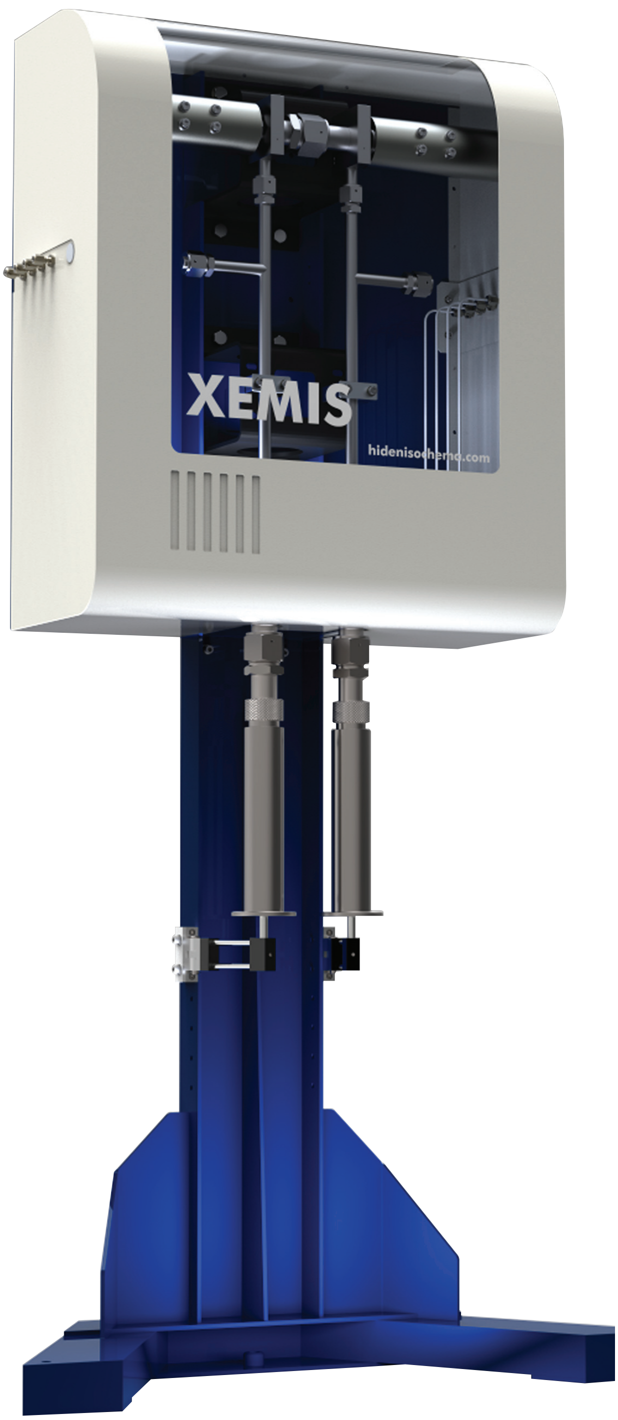
Hiden Isochema
Advancing Sorption Analysis

Newsletter • Autumn 2013

Introducing Hiden Isochema's Next Generation XEMIS Microbalance



Hiden Isochema is pleased to announce the release of a new, innovative gravimetric sorption microbalance: the **XEMIS**!

The **XEMIS** has been custom engineered in its entirety to operate at pressures up to 200 bars and temperatures up to 500 °C. It has also been specifically designed to operate under these demanding conditions with corrosive species.

Next Generation Microbalance Design

The microbalance at the core of every **XEMIS** instrument features Hiden Isochema's unique *exosensing technology* and symmetric geometry for flow and buoyancy compensation, and sets a new standard for gravimetric instrumentation. This advanced design removes all sensitive components from inside the balance chamber, which features all-metal construction with high-performance VCR seals.

Operation at High Pressure and with Flammables and Corrosives

The innovative design of the **XEMIS** allows operation with aggressive and hazardous species without compromising measurement accuracy. It also has the benefit of a minimized internal volume, which reduces operating costs and risks when using rare or hazardous gases. Additionally, the low total system buoyancy reduces the size of the buoyancy correction, which is especially important at high pressures.

Integrated Modular Design

The **XEMIS** retains Hiden Isochema's modular design philosophy, meaning that all configurations are compatible with the full range of accessories and future upgrades. **XEMIS** can be supplied as a stand-alone microbalance, coupled to customers' existing gas delivery systems, or delivered as a fully automated sorption analyzer.

The **XEMIS** meets the needs of scientists in a wide range of research fields, including the study of geological materials, novel synthetic sorbents, pollution control and energy research. Our applications laboratory is available to run measurements with the new **XEMIS**, to demonstrate the powerful capabilities of the new system. If you would like to send us some samples for testing under extreme conditions, please get in touch using the details below.

To request a brochure, or for more information, please email: info@hidenisochema.com or visit our website.

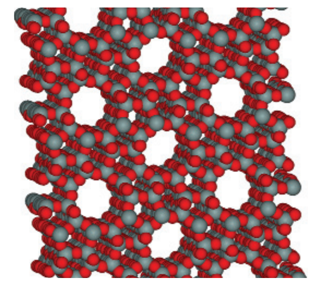
FS 535721 HIDEN ISOCHEMA PART OF THE HIDEN GROUP

422 Europa Boulevard, Warrington WA5 7TS England
t: +44 (0)1925 244 678 e: info@hidenisochema.com
www.hidenisochema.com

New Additions to the Hiden Isochema Journal Library

We continue to add new journal publications to our academic library of papers featuring sorption data from Hiden Isochema instruments. The full library, containing over 450 journal references, is available on our website (http://www.hidenisochema.com/publications) and features a search function to help find interesting articles relevant to your research field. Here we summarize some of the highlights from the new additions:

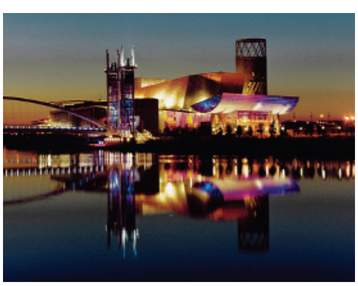
As the opportunity to recover methane gas from shale formations around the world becomes more feasible, research is focussing on the determination of the amount of gas stored within different types of shale under geological pressures and temperatures. To this end, scientists at the University of Newcastle, UK, used a manometric **IMI-FLOW** instrument and a gravimetric **IGA-001** system to characterize the adsorption properties of a shale with a range of different gases, including CH_4, CO_2 and N_2, at a range of temperatures.
T. F. T. Rexer, M. J. Benham, A. C. Aplin and K. M. Thomas, *Energy Fuels* 27 (2013) 3099-3109



Meanwhile, researchers at ETH Zurich, Switzerland, are investigating zeolites with hierarchical porosity, using their **IGA-002** to compare samples with and without increased mesopore volumes. By measuring the adsorption of 2,2-dimethylbenzene vapor, samples modified to increase mesoporous structure were observed to have greater uptake capacity and an increased diffusion coefficient. This allows full exploitation of engineered pore-structure in zeolitic materials for more efficient industrial catalyst design.
L. Gueudré, M. Milina, S. Mitchell and J. Pérez-Ramírez, *Advanced Functional Materials* (in Press) DOI:10.1002/adfm.201203557

If you have recently published data from a Hiden Isochema instrument, we would be very interested to hear more about your research and any relevant references: Please email us now at info@hidenisochema.com

14th International Symposium on Metal-Hydrogen Systems



The 14th International Symposium on Metal - Hydrogen Systems (MH2014) is being held in Salford, Manchester. This is the 27th meeting in a distinguished series of conferences dating back to 1968 and is expected to attract hundreds of academics and experts from around the world. Hiden Isochema is assisting with the organisation of the event and, prior to the main symposium, will be jointly hosting a summer school on the characterization of hydrogen-material interactions with the University of Salford. Delegates will attend two days of lectures by noted academics and invited speakers, as well as hands-on training in the use of hydrogen sorption instruments in Hiden Isochema's laboratory. European Union funding is available to provide a limited number of summer school scholarships: Further information is available on the conference website: www.mh2014.co.uk

New MRS Bulletin Review Article:

"Gas adsorption by nanoporous materials: Future applications and experimental challenges"


Gas adsorption by nanoporous materials: Future applications and experimental challenges
Darren P. Broom and K. Mark Thomas

Hiden Isochema product manager, Dr. Darren Broom and Prof. Mark Thomas of Newcastle University, UK, recently published an *MRS Bulletin* article providing an overview of nanoporous adsorbents, emerging applications, and measurement gas adsorption techniques. (Image reproduced by permission from Cambridge University Press.)

D.P Broom and K. M. Thomas, *MRS Bulletin* 38 (2013) 412-421 Cambridge University Press.

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FS 535721
422 Europa Boulevard, Warrington WA5 7TS England
t: +44 (0)1925 244 678 e: info@hidenisochema.com
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