

Gas sorption analyzer



Technical description:

Using the Sieverts volumetric method, the sorption analyzer makes it possible to determine the amount of gas absorbed by a sample under controlled pressure and temperature conditions. It can be used to analyze H₂, CO₂, CH₄, N₂, and Ar sorption. The unit allows for interfacing with the IMI system in conjunction with an automatic manometric sorption analyzer, enabling PCT (pressure-composition-temperature) isotherm measurements. It also makes it possible to study the kinetics of the sorption-desorption process and the persistence of materials with cyclic gas absorption and desorption over a given temperature and pressure range. The system contains a reaction chamber with a 10 cm³ capable of attaching a buffer volume, enabling measurements with sufficient accuracy for small samples.

Trade name: IMI-0118 HIDEN ISOCHEMA

More details: </equipment/analizator-sorpcji-gazow/>

Access type: External

Type of accreditation / certificate: Not applicable

Contact person: Jabłoński Piotr

Contact person url: <https://skos.agh.edu.pl/osoba/piotr-jablonski-9263.html>

Responsible body: Academic Centre for Materials and Nanotechnology

Group / laboratory / team: Department of Quantum Effects in Nanostructures

Last update date: Nov. 28, 2024, 2:44 p.m.

Year of commissioning: 2013

IDUB research areas:

(PRA 7) Design, production, and testing of modern materials and the technologies of the future based on a multidisciplinary approach combining materials engineering with chemistry, physics, mathematics, and medicine

Research capabilities:

Hydrogen storage capacity determination.

Pressure-Composition-Temperature (PCT) measurements.

Thermodynamic and kinetic studies Metal hydrides and nanoporous materials (carbons, zeolites, MOFs and polymers)

Measurement capabilities:

OPERATING PARAMETERS

Temperature range from R.T. to 500°C

Pressure range 0-200 bar

Sample mass up to 5 g

Measurement resolution < 1 μ mol

Gas flow rate 1000 ml/min

Measurement modes sorption isotherm, sorption/desorption cycles

Conditions for providing infrastructure:

Equipment is made available under the Regulations for the Use of ACMiN Research Infrastructure. Regulations are available here: <https://acmin.agh.edu.pl/acmin/dokumenty/>