PCTPro

Volumetric Sorption - Measurements

The PCTPro is a fully automated Sievert's instrument for the measurement of gas sorption properties of different materials.

HIGHLIGHTS include:

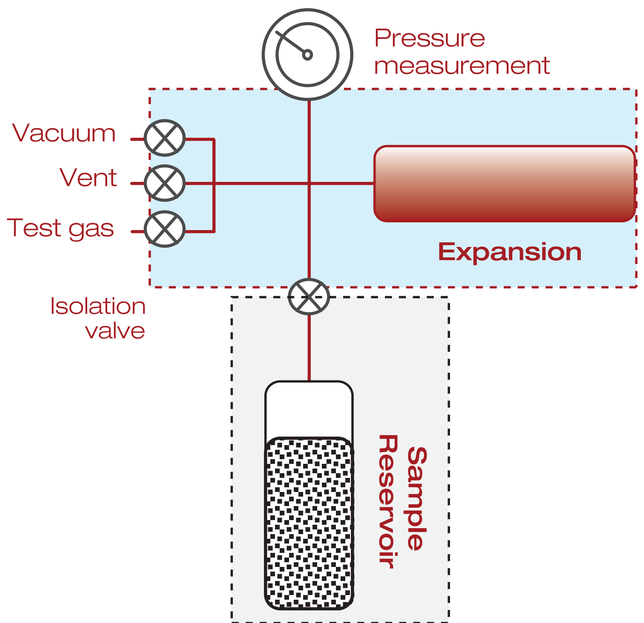
- **Incomparable versatility:** the PCTPro operates from vacuum to high pressure (200 bar) on multiple volume gas doser (5 to 1200 ml) to tackle a wide variety of applications. Moreover the PCTPro is designed to study sorption of a large choice of gases (Carbon Dioxide, Methane, Nitrogen, Argon, Hydrogen,...).
- **Wide range of temperature:** the PCTPro covers a temperature range from -260 °C to 500 °C with different optional sample holders.
- **Large variety of samples:** the PCTPro is designed to work on powders (CO_2 storage materials, catalysts, MOFs), on fibers (carbon), on thin films (food and pharmaceutical packagings, electronics), in liquids (CO_2 capture solvents), coatings etc…
- **Highly automated:** automatic pressure range switching is available between high and low pressure transducers (from 0.001 to 200 bar). The PCTPro software includes 15 automated processes for system preparation, sample preparation and 4 types of measurements (kinetics, PCT, cycling kinetics and cycling PCT).
- **Portable equipment:** the PCTPro is portable and can be combined with other characterization techniques (X-Ray, neutron diffraction, calorimetry).

PRINCIPLE

The PCTPro is based on the Sievert's method.

A sample at known pressure and volume is connected to a reservoir of known volume and pressure through an isolation valve.

Opening the isolation valve allows new equilibrium to be established. Gas sorption is determined by difference in actual measured pressure (Pf) versus calculated pressure (Pc).



SPECIFICATIONS

Temperature range	-260 °C to 500 °C with different sample holders options
Calibrated reservoirs	2 high pressure calibrated volumes (Evo version) 5 high pressure calibrated volumes (E&E version)
Operating pressure range	From vacuum to 200 bar Pressure regulation: automated PID software controlled Aliquot sizing – Fixed P, ΔP or f(ΔP)
Pressure measurements	4 pressure transducers Pressure regulation: 2 transducers for vacuum to 200 bar Experiment pressure: 1 transducer for vacuum to 200 bar 1 transducer for vacuum to 5 bar Accuracy: 1% of the reading
High accuracy option	Accuracy < 0,12% of the reading (vacuum to 5 bar) Accuracy < 0,025% full scale (vacuum to 200 bar)
Maximum sensitivity	3 µmole of gas (with the MicroDoser attachment)
Sorption gas	Carbon Dioxide, Methane, Nitrogen, Argon, Hydrogen, Deuterium, Helium, Oxygen, Neon, Ammonia, n-alcanes from C2 to C6, more on request.

SETARAM Instrumentation
KEP Technologies

ACCESSORIES

- ***Standard stainless steel sample holder*** for 200 bar and 400 °C
- ***Stainless steel high-temperature sample holder*** for 100 bar and 500 °C
- ***Small/large sample holders*** for the best flexibility against sample size and heterogeneity
- ***Liquid sample holder*** for 100 bar and 400 °C
- ***Thin film sample holder*** for 100 bar and 400 °C
- ***CryoPro*** for low temperature from -260 °C to 100 °C for 200 bar
- ***MicroDoser*** for very small sample (from 1 to 500 mg)

THE RGAPRO MASS SPECTROMETER FOR SORPTION GAS ANALYSIS

- from ultra high vacuum to high pressure (200 bar)
- 100, 200 or 300 amu

See PCTPro application notes

www.setaram.com

INSPIRING IMAGINATION FOR MATERIAL SCIENCE