Key measuring capabilities:

- Water sorption and desorption isotherms
- In-situ sample drying to 200 ºC
- Multiple sorption/desorption and sample drying cycles
- Sample masses from 1mg to 5000mg
- Diffusion and permeability measurements

Key hardware benefits:

- Open stand design enabling easy access to sample pan
- Stainless steel stand to minimize static electrical charging
- Wide operational temperature range (5-85 ºC) and uniform temperature enclosure
- Next generation control and evaluation software for the most advanced experimental design and data analysis
- Capability to upgrade to organic vapors and gasses
- Optional IR, Raman and Video imaging

Applications

- Moisture sorption with very low uptake
- Moisture sorption kinetics and Isotherms
- Diffusion coefficients
- Hydration and dehydration studies
- Moisture diffusion into electronic pastes
- Determination of Amorphous Content
- Humidity induced phase transitions
- DVS Video Imaging – Phase Changes

Temperature (Temperature controlled enclosure)

- Control range: 5 °C to 85 °C
- Control precision: ±0.1 °C (from 5 to 60 °C, 60-85 °C ±0.2 °C)
- Enclosure also provides anti-condensation protection

High temperature preheater for sample curing/drying

- Delivers local sample temperatures of up to 200 °C
- Heating ramp rates: up to 5 °C / min
- Sensors: Pt-100 thermocouple type K

Mass measurement

Ultrabalance 1

- High Resolution SMS microbalance
- Sample mass: between 1 and 1000mg
- Mass change: ±150mg
- Resolution (precision): 0.1 µg
- Peak to peak noise: ≤ 0.5 µg

Ultrabalance 2

- High Resolution SMS microbalance
- Sample mass: between 10 and 5000mg
- Mass change: ±1000mg
- Resolution (precision): 1 µg
- Peak to peak noise: ≤ 0.7 µg

Adventure stand

- Manifold: stainless steel
- Seals: Viton
- Tubing: 1/4 inch stainless steel

Relative humidity generation and measurement

- High accurate digital mass flow controllers for delivering gases with humidity control of less than ±0.1%RH
- Relative humidity sensor with measurement precision of ±0.1%RH
- Relative humidity range generated from 0 to 98% (dependent on temperature)

  Range: 5 to 60°C – 0 to 98% RH, 60 to 85°C – 0 to 85% RH

  Accuracy*: 5 to 60°C ± 0.5% RH, 60 to 85°C ± 1% RH*

  *Optional configuration (heated reservoir) for long term 85°C, 85% RH operation.

Computer hardware and software

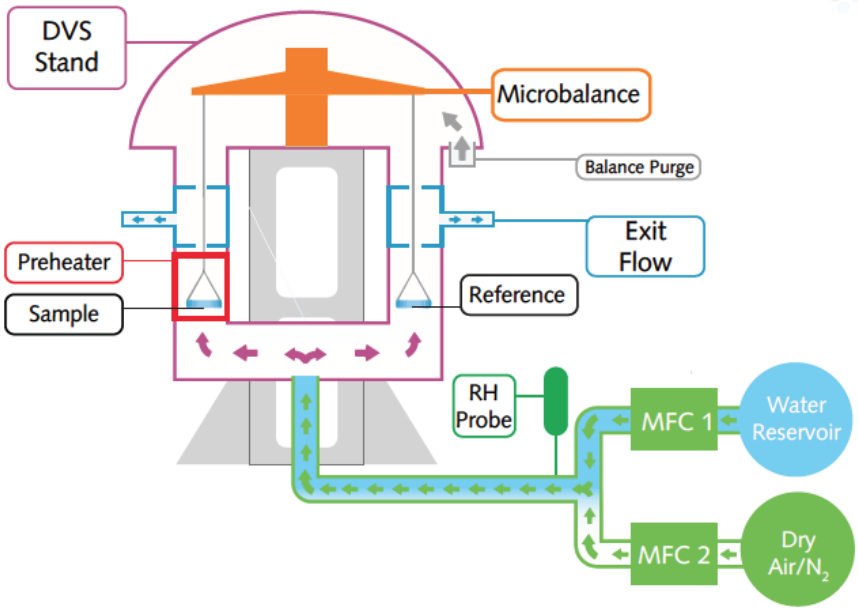
The system is fully automated and controlled by purpose built software. Data can be analyzed in real time using analysis software.

1.1 DVS control software

- Multiple-method protocols incorporating sample pre-heating and temperature changes during an experiment
- Ramp or step changes in relative humidity
- Humidity or temperature stages may be based on fixed-time or user-defined dm/dt criteria
- Isotherm and isoactivity experiments
- Experiments may include half, full or multiple partial pressure or temperature cycles
- Create sequences which allow multiple experiments to be executed one after another
- Simple data export and analysis can be performed without interruption of experiments
- Network data backup functionality is also included

1.2 DVS data analysis suite

- Plot manager
- Isotherm manager
- Permeability and diffusion
- Kinetics information
- Heat of sorption
- T_g determinations
- Amorphous content


DVS Stand
Microbalance
Balance Purge
Exit Flow
Preheater
Sample
Reference
RH Probe
MFC 1
Water Reservoir
MFC 2
Dry Air/N2