



High-Throughput Adsorption Contract R&D

Breakthrough Analysis – Pressurized Gas Purification and Separation

With over 20 years of expertise in high-throughput testing, Avantium accelerates research in (ad)sorbent development and pressurized gas-phase adsorption applications through our dedicated systems. Our high-throughput technology enables parallel screening of numerous adsorbents and adsorption process conditions.



Benefits

Accelerating your experiments by parallelization
Unparalleled reproducibility between columns
Scalable results by mimicking full scale conditions



Features

Small sample size
In situ pretreatment
Unparalleled water vapor control
Flexible accurate gas & vapor dosing of multiple components
Pressurized fixed bed breakthrough experiments
Fast heating and cooling
Repeated cyclic adsorption and desorption
Analytics that fit to your application
Data mining and visualization

Applications

- Biogas separation and purification
- Carbondioxide feed gas purification
- Hydrogen feed gas purification
- Syngas purification and separation
- Point source carbondioxide capture





Pressurized Gas Purification and Separation Specifications

Process Conditions	Range	Remarks
Adsorption temperature range	20 – 50 °C	
Desorption temperature range	< 250 °C	
Relative humidity	< 90 %RH	
Operating pressure	7 – 50 barg	
Sample volume	0.1 - 2.0 mL	
Flow	NmL/min	
Multicomponent concentrations	PPM – Vol %	
GHSV	hr ⁻¹	



Dedicated Service Process

- Intake by detailed scoping process
- Setup by scalable (ad)sorbent preparation
- Analytical method development
- Test program, executing the design of experiment (DOE)
- Regular data reporting in pre-defined formats
- Evaluation and close-out include support for data interpretation

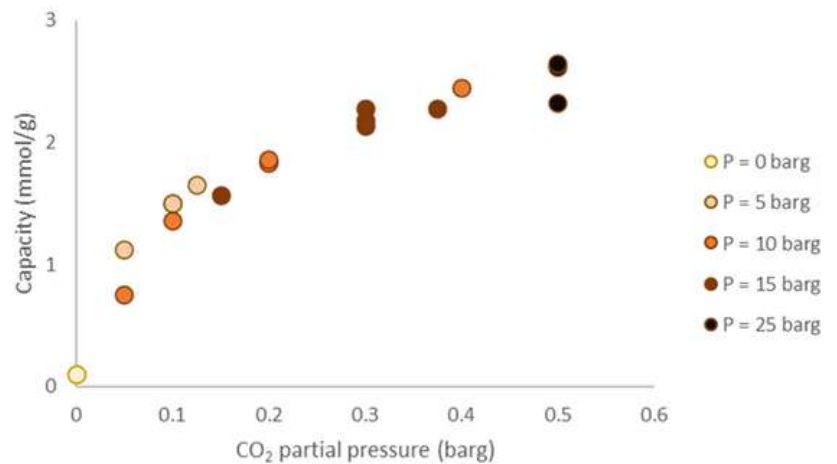
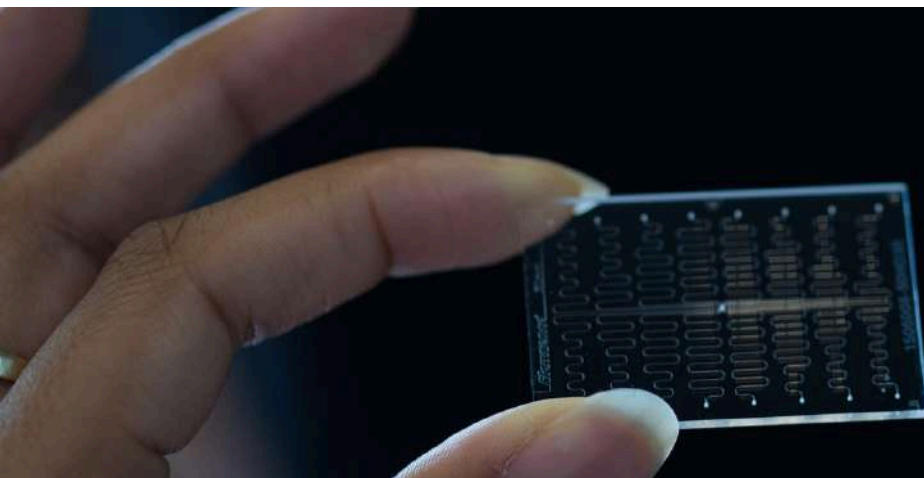


Fig: Capacity of 13x measured with different CO₂ concentrations and total pressures obtained from breakthrough experiments used to recreate pressure isotherm



Avantium R&D Solutions is provider of advanced testing units and services. We provide leading producers and research institutes developing better and more efficient (ad)sorbents and catalysts with our high-throughput technology. We offer customized catalyst and (ad)sorbent testing systems & services.

