

# PBAST-9



## PROGRAMME BOOK



9<sup>th</sup> Pacific Basin Conference on  
Adsorption Science & Technology

September 23 – 27, 2024

The Waterfront Hotel (Kuching)  
Sarawak, Malaysia



# The Choice Is Clear. Absolutely Autosorb.

**Autosorb series**

**Rely on TruZone active coolant level control** for accurate data

**Stay Agile: measure 3 samples, 3 gases, 3 temperatures** at once

**Accessible Kaomi software** makes experiment setup and data analysis easy

**Adaptable:** Customize one of three advanced instrument models to meet your needs

## ABOUT PBAST-9

### **Pacific Basin Conference on Adsorption Science & Technology (PBAST)**

Pacific Basin Adsorption Science & Technology (PBAST) conference series is an international platform for researchers and professionals involved in the field of adsorption science and technology, especially those from the Pacific Rim, to freely discuss and exchange ideas. As a major event in adsorption studies, the conference aims to motivate researchers and professionals from academia, industry, and government to continue developing their research in fields related to adsorption through lectures, meetings, forum discussion. Past events were held in Japan (1997), Australia (2000), Korea (2003), China (2006), Singapore (2009) Japan (2018). The present 9th Pacific Basin Conference on Adsorption Science and Technology (PBAST) is held from 23<sup>rd</sup> to 27<sup>th</sup> September 2024, in the Waterfront Hotel, Kuching, Sarawak, the Land of Hornbill in Malaysia.

## SCOPE

The conference aims at promoting fundamental and applied studies related to adsorption. The main topics include, but not limited to:

- Adsorption Modelling, Simulation and Catalysis (C1)
- Fundamentals of Adsorption (C2)
- Materials Synthesis of Novel Adsorbent and other topics (C3)
- Applications of Adsorption for Energy Related Applications (C4)
- Applications of Adsorption for Environmental and Bio-applications (C5)
- Advanced Materials for Adsorption (C6)

## ONLINE ABSTRACT

Please scan the QR Code or key in the link to view or download the abstracts.



<https://drive.google.com/drive/folders/10bMI4-iUJDIRdGEUkYCVXqBlgXRTwY3C>

## CONTENTS

<b>ABOUT PBAST-9 .....</b>	<b>1</b>
<b>SCOPE .....</b>	<b>1</b>
<b>ONLINE ABSTRACT.....</b>	<b>1</b>
<b>CONTENTS .....</b>	<b>2</b>
<b>HOSTS .....</b>	<b>3</b>
<b>INTERNATIONAL ADVISORY PANEL .....</b>	<b>3</b>
<b>SPONSORS .....</b>	<b>3</b>
<b>SPONSORS AND EXHIBITORS .....</b>	<b>4</b>
<b>COMMITTEES.....</b>	<b>5</b>
<b>ORGANIZER &amp; CONTACT .....</b>	<b>5</b>
<b>VENUE .....</b>	<b>6</b>
<b>MAP &amp; FLOOR PLAN .....</b>	<b>7</b>
<b>SOCIAL EVENTS .....</b>	<b>8</b>
<b>EXCURSION .....</b>	<b>9</b>
<b>PROGRAMME SCHEDULE .....</b>	<b>10</b>
<b>PLENARY LECTURES .....</b>	<b>19</b>
<b>KEYNOTE LECTURES .....</b>	<b>20</b>
<b>POSTER PROGRAMME.....</b>	<b>21</b>
<b>NOTES .....</b>	<b>24</b>

## HOSTS

### HOST

Organizing Committee of The 9th Pacific Basin  
Conference on Adsorption Science And Technology

---

### CO-HOSTS

Universiti Sains Malaysia

---

## INTERNATIONAL ADVISORY PANEL

### International panel:

Katsumi Kaneko	Shinshu University, Japan
Duong D Do	University of Queensland, Australia
Chang-Ha Lee	Yonsei University, Korea
Shin Mukai	Hokkaido University, Japan
Alexander V. Neimark	Rutgers University, United States
Li Zhong	South China University of Technology

## SPONSORS

Business Events  
Sarawak  
(BESarawak)



ITZ International  
Techzone



University  
Alliance in  
Talent Education  
Development,  
UAiTED



## SPONSORS AND EXHIBITORS

Anton Paar



Surface  
Measurement  
Systems



ITS-Microtrac  
Belsorp



BSD Instrument



GAT Scientific-  
Micromeritics



KGC Resources



## COMMITTEES

### **ORGANIZING COMMITTEE**

#### **CHAIRMAN:**

Yeoh Fei Yee Universiti Sains Malaysia (USM)

---

#### **DEPUTY CHAIRMAN:**

Xia Qibin South China University of Technology (SCUT)

Jin (Eric) Shang City University of Hong Kong (CityU)

---

#### **SECRETARY:**

Chin Suk Furn Universiti Malaysia Sarawak (UNIMAS)

Chuah Mui Ling (Assistant) Universiti Sains Malaysia (USM)

---

#### **TREASURER:**

Sheikh Abdul Rezan Bin Sheikh Universiti Sains Malaysia (USM)

Abdul Hamid

---

#### **SCIENTIFIC:**

Mohd Azmier Ahmad Universiti Sains Malaysia (USM)

---

#### **PUBLICATION:**

Mohamad Firdaus Mohamad Yusop Universiti Sains Malaysia (USM)

---

#### **PUBLICITY:**

Jin (Eric) Shang City University of Hong Kong (CityU)

Cheah Li Kim Universiti Sains Malaysia (USM)

---

#### **LOGISTIC:**

Tay Kai Ming Universiti Malaysia Sarawak (UNIMAS)

---

#### **SPONSORSHIP/ PROMOTION:**

Khor Shi Yu Tekno Impact PLT

---

#### **STUDENT COMMITTEE:**

Nuraishah Maisarah Binti Norazam Universiti Sains Malaysia (USM)

Teoh Chia Hui Universiti Sains Malaysia (USM)

Huan Jia Yin Universiti Sains Malaysia (USM)

---

## ORGANIZER & CONTACT

Correspondence

Assoc. Prof. Dr. Yeoh Fei Yee  
 School of Materials & Mineral Resources Engineering  
 Universiti Sains Malaysia  
 14300 Nibong Tebal, Penang, Malaysia.  
 Email: [pbast9.msia@gmail.com](mailto:pbast9.msia@gmail.com)

## VENUE

### The Waterfront Hotel, Kuching, Sarawak

68, Jalan Tun Abang Haji Openg, 93000 Kuching Sarawak.



*The Waterfront Hotel exterior*



*Cafe*



*Function Room Level 4: TUBAU 1,2,3*

**Plenary & Keynote Lectures:** Tubau 1 & 2 (Level 4)

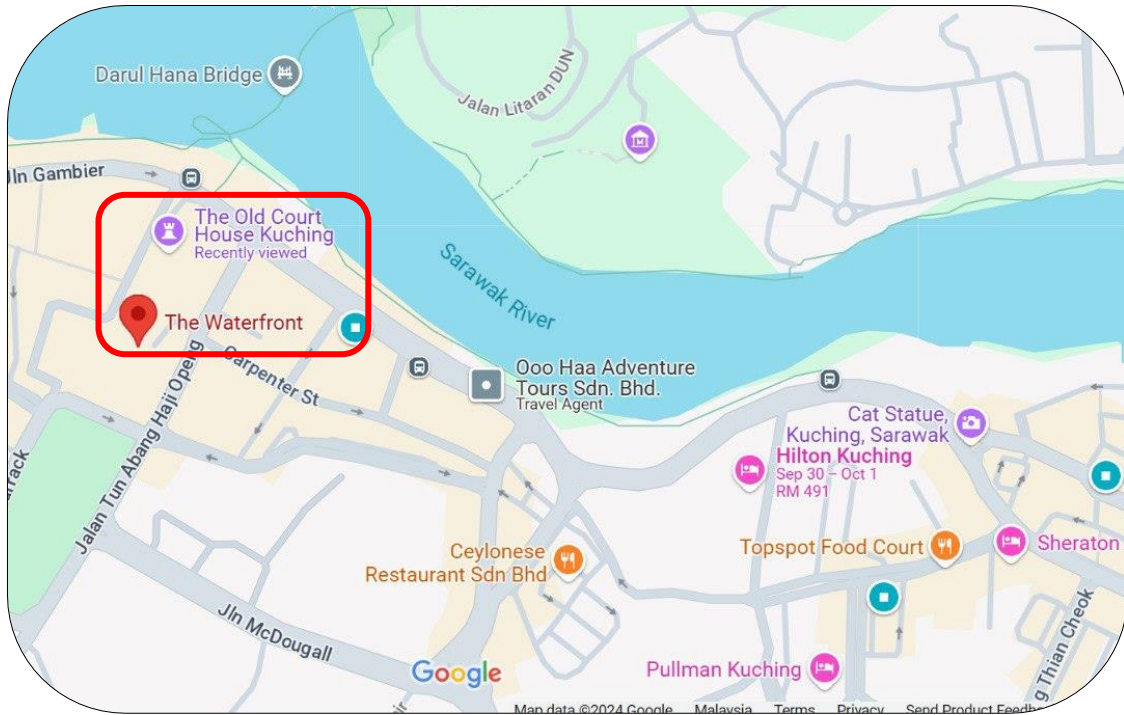
**Oral presentation:** Tubau 1, 2 & 3 (Level 4)

**Poster presentation:** Tubau 1 & 2 (Level 4)

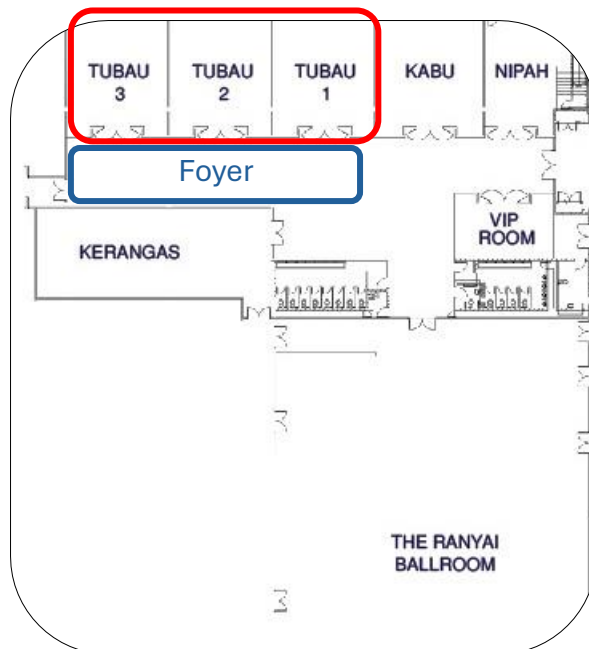
**Exhibition:** Foyer (Level 4)



## MAP & FLOOR PLAN



*Sarawak River*



*Level 4, the Waterfront Hotel (Kuching, Sarawak)*

## SOCIAL EVENTS

### **Pre-Conference Workshop (23 September 2024)**

The pre-conference workshop will be held at Auditorium/Level 2 Menara SEB, Sarawak Energy Berhad.



### **Welcome Reception (24 September 2024)**

The welcome reception will be held at Roof Top, 13<sup>th</sup> Floor of the Waterfront Hotel.



### **Banquet (26 September 2024)**

The banquet will be held at the Old Court House, Kuching.



## EXCURSION

### Excursion (27 September 2024)

The conference excursion include visits to the Sarawak Cultural Village, Semenggoh Orangutan Wildlife Centre, and a Sarawak Sunset River Cruise. Participants will explore traditional ethnic houses, observe orangutans in their natural habitat, and enjoy a scenic cruise along the Sarawak River.

\*Local meals at own expenses



*Sarawak Cultural Village*



*Semenggoh Orangutan Wildlife  
Centre*



*Sarawak Sunset River Cruise*

## PROGRAMME SCHEDULE

### **Schedule Summary:**

Day 1: Monday, 23<sup>rd</sup> September 2024

- Pre-conference workshop – Refer Table 1
- Welcome reception – Refer Table 1

Day 2: Tuesday, 24<sup>th</sup> September 2024

- Opening ceremony – Refer Table 2
- Oral presentation – Refer Table 2

Day 3: Wednesday, 25<sup>th</sup> September 2024

- Oral presentation – Refer Table 3

Day 4: Thursday, 26<sup>th</sup> September 2024

- Oral presentation – Refer Table 4
- Poster presentation – Refer Table 4
- Closing ceremony – Refer Table 4
- Banquet – Refer Table 4

Day 5: Friday, 27<sup>th</sup> September 2024

- Excursions – Refer Table 5

### **Categories of Topic:**

Category 1 (○): Adsorption Modelling, Simulation and Catalysis:  
9 Oral + 2 Poster = 11

Category 2 (●): Fundamentals of Adsorption:  
12 Oral + 0 Poster = 12

Category 3 (□): Synthesis of Novel Adsorbent and Other Topics:  
8 Oral + 8 Poster = 16

Category 4 (■): Adsorption for Energy Related Applications:  
13 Oral + 1 Poster = 14

Category 5 (△): Adsorption for Environmental and Bio-applications:  
8 Oral + 9 Poster = 17

Category 6 (▲): Advanced Materials for Adsorption:  
14 Oral + 9 Poster = 23

**Table 1 : Tentative Programme Schedule for PBAST-9 Conference Day 1  
(Pre-Conference Workshop)**

**Date : 23<sup>rd</sup> September 2024 (Monday)**

**Venue : Auditorium/Level 2, Menara SEB, Sarawak Energy Berhad**

**Important : Confirmation is required through a separate registration using google form. Lunch & transportation will only be provided for those who registered for the workshop.**

	<b>AUDITORIUM (LEVEL 2), MENARA SEB</b>
08.30 – 09.00 am	<b>REGISTRATION</b>
09.00 – 09.15 am	Arrival of speakers and participants
09.15 – 09.30 am	Safety briefing
09.30 – 09.45 am	Opening remarks by PBAST-9 Secretariat
09.45 – 10.00 am	Opening remarks by SEB representative
10.00 – 11.00 am	Workshop by Prof. Katsumi Kaneko (Part I)
11.00 – 11.15 am	<b>TEA BREAK</b>
11.15 – 12.15 pm	Workshop by Prof. Katsumi Kaneko (Part II)
12.15 – 12.45 pm	Q&A Session
12.45 – 13.00 pm	Souvenirs Giving Ceremony & Photo Taking Session
13.00 pm	<b>LUNCH</b>
14.00 – 19:00 pm	<b>REGISTRATION (The Waterfront Hotel Lobby)</b>

	<b>WELCOME RECEPTION</b>
07.00 – 09.00 pm	(By Invitation, Roof Top, 13 <sup>th</sup> Floor – the Waterfront Hotel)

**Table 2 : Tentative Programme Schedule for PBAST-9 Conference Day 2**

**Date : 24<sup>TH</sup> September 2024 (Tuesday)**

**Venue : Conference @ Level 4, The Waterfront Hotel, Kuching (Tubau 1, 2 & 3)**

	Main room (Tubau 1 & 2)	Room 2 (Tubau 3)
07.30 – 09.00 am	<b>REGISTRATION (Foyer of Function Rooms - Level 4)</b>	
09.00 – 09.05 am	Opening Ceremony & Welcoming Speech by Organizing Chairman	
09.05 – 09.10 am	Welcoming Speech by Chief Advisor of International Advisory Panel	
09.10 – 09.50 am	<b>▲ Plenary Speaker 1</b> – Prof. Youn Sang Bae (S10084) <i>MOF and COF Adsorbents for Industrially and Environmentally Important Separations</i>	
09.50 – 10.30 am	<b>● Industry Speaker 1</b> – Dr. Neil Dong, BSD Instrument (S10138) <i>Porous Material Adsorption Separation Characterization Solution</i> <b>BSD INSTRUMENT</b>	
10.30 – 10.50 am	<b>TEA BREAK</b>	
	<b>SESSION X1</b>	<b>SESSION X2</b>
10.50 – 11.10 am	<b>▲ X1.01</b> (S10081: Dr. Arami Niya Arash) <i>Temperature Regulated Gas Adsorption and Gas Separation Potential of Cation-Exchanged Zeolite RHO</i>	<b>△ X2.01</b> (S10035: Dr. YangYang Guo) <i>Functionalized Dual/Multi-Ligand Metal-Organic Frameworks for Efficient CO<sub>2</sub> Capture from Flue Gas</i>
11.10 – 11.30 am	<b>▲ X1.02</b> (S10024: Dr. Masaaki Yoshikawa) <i>Porous Carbons for Novel Zn-Anode Rechargeable Battery</i>	<b>△ X2.02</b> (S10105: Prof. Bin Xu) <i>Efficient Catalytic Oxidation of NO with Non-Faradaic Charging at <math>\alpha</math>-MnO<sub>2</sub></i>
11.30 – 11.50 pm	<b>● X1.03</b> (S10066: Prof. Takahiro Ohkubo) <i>Spontaneous Formation of Strong Acid Layer in Carbon Micropore from Neutral pH Aqueous Solution</i>	<b>■ X2.03</b> (S10058: Prof. Teresa J Bandosz) <i>Oxygen Adsorption from Electrolyte on Porous Carbons of Complex Surface features: Effect of Small Pores Accessibility on ORR efficiency</i>
11.50 – 12.10 pm	<b>▲ X1.04</b> (S10025: Prof. David Shooto Ntaote) <i>Removal of ibuprofen and paracetamol from water using blend activated carbon from paper waste and avocado seeds</i>	<b>○ X2.04</b> (S10030: Prof. Georgi Vayssilov) <i>Computational Modeling of Adsorption and Conversion of Carbon Dioxide in Zeolites</i>
12.10 – 12.30 pm	TBD	TBD
12.30 – 02.00 pm	<b>LUNCH BREAK</b>	

12.30 – 02.00 pm	<b>LUNCH BREAK</b>	
02.00 – 02.40 pm	<b>● Industry Speaker 2</b> – Dr. Adolphs Jürgen, ITS, Belsorp Microtrac (S10064) <i>Importance of accurate sorption measurements</i> <i>Excess Surface Work – Disjoining Pressure Model Applied on Mesoporous Materials</i>	
	<b>SESSION X3</b>	<b>SESSION X4</b>
02.40 – 03.20 pm	<b>Keynote Speaker 1</b> ○ <b>X3.01</b> (S10104: Prof. Hideki Tanaka)  <i>Elucidation of Gas Adsorption Behavior through the Combination of Computational Science and Synchrotron Radiation Experiments</i>	<b>Keynote Speaker 2</b> △ <b>X4.01</b> (S10128: Prof. Ruey-An Doong)  <i>Highly efficient electrosorption for inorganic and metal ions removal with novel low-dimensional carbon-based nanocomposites in aqueous solutions</i>
03.20 – 03.40 pm	■ <b>X3.02</b> (S10015: Mr. Youngho Cho)  <i>Desulfurization Mechanism of Ultra-Low Concentration H<sub>2</sub>S and THT in Natural Gas on Zeolite 5A and 13X, and Cu-AC Pellets</i>	△ <b>X4.02</b> (S10082: Prof. Ki Bong Lee)  <i>Upcycling of polyethylene terephthalate waste into porous carbons for potential CO<sub>2</sub> adsorbents using autogenic pressure carbonization</i>
03.40 – 04.00 pm	○ <b>X3.03</b> (S10080: Dr. Johnathan Tan)  <i>Evaluation of polymer liner for the prevention of hydrogen embrittlement based on their interaction</i>	△ <b>X4.03</b> (S10039: Mr. Peng Wang)  <i>Aqueous dispersibility and cytotoxicity of surfactant adsorbed giant hollow carbon tubes</i>
04.00 – 04.20 pm	<b>TEA BREAK</b>	
04.20 – 05.00 pm	<b>Invited Speaker 1</b> ● <b>X3.04</b> (S10123: Prof. Akihiko Matsumoto)  <i>Adsorption Characteristics and Adsorption-induced Structural Transition of Porous Coordination Polymers with Flexible Ligands</i>	<b>Invited Speaker 2</b> □ <b>X4.04</b> (S10010: Prof. Katsumi Kaneko)  <i>Ambient condition-storage of high-pressure methane on graphene-valves installed porous carbons</i>
05.00 – 05.20 pm	■ <b>X3.05</b> (S10109: Mr. Shigaki Nobuyuki)  <i>Carbon Recycling System with Gas Fraction CO<sub>2</sub>-VPSA and H<sub>2</sub>O Separation Membrane Reactor</i>	△ <b>X4.05</b> (S10121: Prof. Ziyi Li)  <i>NO<sub>x</sub> adsorptive purification with efficient recycling of NO<sub>2</sub> from flue gas</i>
05.20 – 05.40 pm	■ <b>X3.06</b> (S10108: Mr. Tomoyuki Okida)  <i>Development of Gas Fraction VPSA for CO<sub>2</sub> Separation from Blast Furnace Gas</i>	△ <b>X4.06</b> (S10040: Ms. Mengli Tian)  <i>Biocompatible honeycomb monolith with micro-meter-scale straight channels as cell culture scaffold</i>
05.40 – 06.00 pm	▲ <b>X3.07</b> (S10129: Dr. Wang Zhen-Ming)  <i>Fabrication and application of interlayer charge-controlled graphene nanocomposite membrane</i>	△ <b>X4.07</b> (S10059: Dr. Pandey Jyoti Shanker)  <i>Gas Storage Potential in MOF Ink-Soaked Material Under Gas Hydrate Formation Conditions</i>

**Table 3 : Tentative Programme Schedule for PBAST-9 Conference Day 3**

**Date : 25<sup>th</sup> September 2024 (Wednesday)**

**Venue : Conference @ Level 4, The Waterfront Hotel, Kuching (Tubau 1, 2 & 3)**

	Main room (Tubau 1 & 2)	Room 2 (Tubau 3)
09.00 – 09.40 am	<b>Industry Speaker 3</b> – Dr. Katie Struckhoff, Anton Paar <i>Anton Paar's Solution for Powder Characterization</i>	
09.40 – 10.20 am	<b>▲ Plenary Speaker 2</b> – Prof. Shin Mukai (S10093) <i>Porous Monoliths with Straight and Aligned Microchannels</i>	
10.20 – 10.40 am	<b>TEA BREAK</b>	
	<b>SESSION Y1</b>	<b>SESSION Y2</b>
10.40 – 11.20 am	<b>Invited Speaker 3</b> ● <b>Y1.01</b> (S10037: Prof. Joaquin Silvestre – Albero) <i>Structural Flexibility in ZIFs upon Adsorption</i>	<b>Keynote Speaker 3</b> ■ <b>Y2.01</b> (S10053: Prof. Hiroto Nishihara) <i>Edge-site-free and topological-defect-rich graphene mesosponge for battery-related applications</i>
11.20 – 11.40 am	● <b>Y1.02</b> (S10100: Mr. Homare Arima) <i>Investigating Guest-Induced Structural Transitions of Individual Flexible MOF Particles Using Atomic Force Microscopy and Thermodynamic Analysis</i>	■ <b>Y2.02</b> (S10088: Mr. Sejin Park) <i>Physisorption-based hydrogen compressor for hydrogen refueling stations: a comparison between MOF-5 and MSC-30</i>
11.40 – 12.00 am	● <b>Y1.03</b> (S10092: Dr. Kaifei Chen) <i>Improving Adsorption Performance of Zeolites by Electric Field Activation</i>	■ <b>Y2.03</b> (S10018: Prof. Guoping Hu) <i>Separation of Methane/Nitrogen Using Ionic Liquidic Zeolites (ILZ) by Pressure Swing Adsorption (PSA): from Laboratory to Industry</i>
12.00 – 12.20 am	● <b>Y1.04</b> (S10062: Prof. Ryusuke Futamura) <i>Role of the Staggered Interlayer Structure of Graphene Oxide for H<sub>2</sub>O/D<sub>2</sub>O Selective Adsorption</i>	■ <b>Y2.04</b> (S10079: Assoc. Prof. Kevin Gang Li) <i>In-situ vapor promoted direct air CO<sub>2</sub> capture</i>
12.20 – 12.40 pm	<b>GROUP PHOTO SESSION</b>	
12.40 – 02.00 pm	<b>LUNCH BREAK</b>	



12.40 – 02.00 pm	<b>LUNCH BREAK</b>	
	<b>SESSION Y3</b>	<b>SESSION Y4</b>
02.00 – 02.40 pm	<p style="text-align: center;"><b>Invited Speaker 4</b></p> <p>● <b>Y3.01</b> (S10103: Prof. Alexander V. Neimark) <i>Adsorption on Flexible Nanoporous Materials: Coupling Adsorption and Mechanical Properties</i></p>	<p style="text-align: center;"><b>Invited Speaker 5</b></p> <p>○ <b>Y4.01</b> (S10106: Prof. Andrew Kun-Yi Lin) <i>Unveiling the Role of Oxygen Vacancies in Yolk-Shell Co<sub>3</sub>O<sub>4</sub> Nanospheres for Enhanced H<sub>2</sub>O<sub>2</sub> Sorption and Activation</i></p>
02.40 – 03.00 pm	<p>● <b>Y3.02</b> (S10061: Prof. Takahiro Ueda) <i>The role of the 2-substituent group of imidazole ligands in adsorbing bulky molecules on ZIF-8 and its analogues</i></p>	<p>○ <b>Y4.02</b> (S10027: Dr. Takeshi Mori) <i>Designing cost-effective supported catalyst for low-temperature oxidation of gaseous plant hormone ethylene</i></p>
03.00 – 03.20 pm	<p>● <b>Y3.03</b> (S10101: Dr. Quang Loi) <i>Hindered transport of water in pristine and functionalised carbon nanopores</i></p>	<p>○ <b>Y4.03</b> (S10114: Prof. Donghui Zhang) <i>Simulation of two-stage dual reflux pressure swing adsorption process for CO<sub>2</sub> capture from flue gas</i></p>
03.20 – 03.40 pm	<p>● <b>Y3.04</b> (S10043: Ms. Marhaina Ismail) <i>Mechanism of Carbon Dioxide Adsorption on Gallate-based Metal-organic Frameworks</i></p>	<p>○ <b>Y4.04</b> (S10076: Mr. Yasuhiro Sugiyama) <i>Topological Analysis of Highly Stabilized Amorphous Ice Confined in Nanopores</i></p>
03.40 – 04.00 pm	<p>● <b>Y3.05</b> (S10017: Prof. Shang Jin) <i>The Development of Molecular Trapdoor Mechanism for Adsorptive Gas Separation</i></p>	TBD
04.00 – 04.20 pm	<b>TEA BREAK</b>	
04.20 – 05.00 pm	<p style="text-align: center;"><b>Invited Speaker 6</b></p> <p>■ <b>Y3.06</b> (S10016: Prof. Chang Ha Lee) <i>Techno-Economic Analysis by Machine Learning-Based Optimization of Hybrid Processes Using Absorption, Cryogenic, and PSA for CO<sub>2</sub> Capture and H<sub>2</sub> Production from a Steam Methane Reforming Plant</i></p>	<p style="text-align: center;"><b>Invited Speaker 7</b></p> <p>□ <b>Y4.06</b> (S10029: Assoc. Prof. Cheung Ocean) <i>Selective SF<sub>6</sub> and CO<sub>2</sub> sorption by pore size tuning of framework porous materials - case study with ZIF-7-8 and KAUST-7</i></p>
05.00 – 05.20 pm	<p>■ <b>Y3.07</b> (S10009: Prof. Satoshi Inagaki) <i>Preferential adsorption of propane on pure-silica zeolite beta</i></p>	<p>□ <b>Y4.07</b> (S10090: Ms. Hyunlim Kim) <i>Efficient Hydrogen Isotope Separation Using Metal-Organic Frameworks: A Gate-Opening Control Strategy via Ion Exchange</i></p>
05.20 – 05.40 pm	<p>■ <b>Y3.08</b> (S10087: Ms. Jianing Yang) <i>Recovery of Low-Concentration Hydrogen Using Alloy LaNi<sub>5</sub> Based Pressure Swing Adsorption</i></p>	<p>□ <b>Y4.08</b> (S10097: Mr. Jung Sung Yeop) <i>Optimized Pore Size for Hydrogen Isotope Separation Using a Novel Cryogenic Dynamic Column Breakthrough Apparatus</i></p>
05.40 – 06.00 pm	<p>■ <b>Y3.09</b> (S10110: Prof. Hyunchul Oh) <i>Enhanced Dormancy and Boil-Off Reduction in Liquid Hydrogen Storage Using Metal-Organic Frameworks</i></p>	<p>□ <b>Y4.09</b> (S10057: Mr. Minghao Li) <i>Adsorption Amount-controlled <sup>129</sup>Xe NMR Technique as Pore Shape Distinguish Method of Porous Materials</i></p>

**Table 4 : Tentative Programme Schedule for PBAST-9 Conference Day 4**

**Date : 26<sup>th</sup> September 2024 (Thursday)**

**Venue : Conference @ Level 4, The Waterfront Hotel, Kuching (Tubau 1, 2 & 3)  
Banquet Dinner @ the Old Court House (by Invitation,  
Attire: Business Casual)**

	Main room (Tubau 1 & 2)	Room 2 (Tubau 3)
09.00 – 09.40 am	<input type="checkbox"/> <b>Industry Speaker 4</b> – Surface Measurement System: (S10045: Dr. Lisa Mingzhe Sun) <i>Realistic evaluation of prototypical porous materials for carbon capture</i>	
	<b>SESSION Z1</b>	<b>SESSION Z2</b>
09.40 – 10.20 am	<b>Invited Speaker 8</b> <input type="radio"/> <b>Z1.01</b> (S10127: Dr. Abdul Hanif Mahadi)  <i>PdZn/ZnO–TiO<sub>2</sub> catalysts for CO<sub>2</sub> hydrogenation to methanol</i>	<b>Invited Speaker 9</b> <input checked="" type="radio"/> <b>Z2.01</b> (S10098: Dr. Ramon Christian Eusebio)  <i>Removal of Aluminum (III) from Synthetic Acid Mine Drainage through Adsorption using Loose and 3D-Printed Philippine Natural Zeolite</i>
10.20 – 10.40 am	<input type="checkbox"/> <b>Z1.02</b> (S10135: Prof. Hiroataka Nakatsuji)  <i>Functions of solid nanoporous fullerene polymer cross linked with dialdehydes</i>	<input checked="" type="radio"/> <b>Z2.02</b> (S10026: Mr. Moon-Kyung Cho)  <i>Synthesis of Acrylamide-derived Heteroatom-doped Activated Carbon for CO<sub>2</sub> Adsorption</i>
10.40 – 11.00 am	<input type="checkbox"/> <b>Z1.03</b> (S10085: Prof. Zhong Li)  <i>Model, Synthesis and Application of New Generation of Ultra-Microporous Carbon Sieves with Molecule Recognition Accuracy of Sub-Angstrom</i>	<input checked="" type="radio"/> <b>Z2.03</b> (S10020: Mr. Minghao Liu)  <i>High Mechanical Strength Carbonized Monolith for Rapid Water Filtration</i>
11.00 – 11.20 am	<b>TEA BREAK</b>	
11.20 – 11.40 am	<b>Keynote Speaker 4</b>  <input checked="" type="radio"/> <b>Z1.04</b> (Prof. Jose Paulo Mota) <i>Continuous Chromatographic Downstream Processing of Biopharmaceuticals</i>	<input checked="" type="radio"/> <b>Z2.04</b> (S10078: Prof. Qibin Xia) –  <i>Constructing positive potential trap for efficient octafluoropropane purification by a robust aluminum-based MOF</i>
11.40 – 12.00 pm		<input type="checkbox"/> <b>Z2.05</b> (S10122: Mrs. Azieyanti Nurain)  <i>UiO-66 Nanobeads for Microplastic Adsorption in Aqueous Environment</i>
12.00 – 12.20 pm	<input checked="" type="radio"/> <b>Z1.05</b> (S10086: Xin Zhou)  <i>Green Synthesis of Novel Coffee Bean-derived Carbon Molecule Sieves for Efficient Separation of C<sub>4</sub> Olefins with Sub-Angstrom Accuracy</i>	<input type="checkbox"/> <b>Z2.06</b> (S10060: Mr. Miyoshi Robichon)  <i>ZSM-5 Monolith Developed by Templating Method with Controlled Regrowth of Nanocrystals for Selective CO<sub>2</sub> Removal</i>

12.20 – 12.40 pm	▲ <b>Z1.06</b> (S10050 Wang Zhe) <i>Novel Efficient Method for Shaping Metal Organic Frameworks</i>	▲ <b>Z2.07</b> (S10063: Prof. Daofei Lyu) <i>A zinc-octacarboxylate MOF with an unusual (6, 8)-connected ocu topology for high-capacity adsorptive separation of C8 alkylaromatics</i>
12.40 – 01.00 pm	■ <b>Z1.07</b> (S10136: Prof. Tao YouSheng)  <i>Determining the nanoporosity dependence of carbon cathode materials for zinc-ion hybrid capacitors</i>	▲ <b>Z2.08</b> (S10073: Prof. Zhenxia Zhao)  <i>Encapsulated electron-rich CDs as Light-Heat Convertible Units by Site-specific nucleation of MOF(Cr) for efficient adsorption and photothermal desorption</i>
01.00 – 02.00 pm	<b>LUNCH BREAK</b>	
02.00 – 03.00 pm	POSTER PRESENTATION  (PLEASE REFER TABLE 6)	FORUM WITH INDUSTRY  (All Southeast Asia Adsorption Scientists are invited)
03.00 – 04.00 pm		MEETING FOR PBAST-10 (By Invitation)
04.00 – 04.20 pm	<b>TEA BREAK</b>	
04.20 – 04.40 pm	POSTER PRESENTATION  (PLEASE REFER TABLE 6)	TBD
04.40 – 05.00 pm		TBD
05.00 – 05.20 pm		TBD
05.20 – 06.00 pm	<b>AWARD AND CLOSING CEREMONY</b>	
	<b>BANQUET</b> (By Invitation, the Old Court House – Opposite the Waterfront Hotel)	
07.00 – 07.30 pm	Guests Arrival and Seating at Banquet Hall	
07.30 – 08.00 pm	Appreciation Speeches	
08.00 – 09.30 pm	Dinner & Performance	

**Table 5 : Tentative Programme Schedule for PBAST-9 Conference Day 5  
(Excursion)**

**Date : 27<sup>th</sup> September 2024 (Friday)**

**Time : 9.30am**

**Venue : Gather @ the Lobby, the Waterfront Hotel, Kuching (By invitation)**

	Itinerary	Venue
<b>EXCURSION (By Invitation)</b>		
08.00 – 08.30 am	Gather @ the Lobby, Ground Floor	The Waterfront Hotel, Kuching
08.30 – 09.30 pm	Departure to Sarawak Cultural Village	Tour bus provided
09.30 – 13.00 pm	Visit Long Houses, Cultural Performance	Sarawak Cultural Village
13.00 – 02.00 pm	Lunch	Choose your own favourite local delights  (own expenses)
02.30 – 03.30 pm	Visit Men of the Forest	Semenggoh Orang Utan Wildlife Centre
03.30 – 04.00 pm	Back to City Centre	Tour bus provided
05.00 – 07.00 pm	Sarawak Sunset River Cruise	River Cruise @ Kuching Waterfront



*Sarawak Cultural Village*



*Semenggoh Orangutan Wildlife  
Centre*



*Sarawak Sunset River Cruise*

## PLENARY LECTURES

Tuesday, 24 September

---

9.10 am

MOF and COF Adsorbents for  
Industrially and Environmentally  
Important Separations

Prof. Youn-Sang Bae

Yonsei University, Korea



Wednesday, 25 September

---

9.40 am

Porous Monoliths with Straight and  
Aligned Microchannels

Prof. Shin R. Mukai

Hokkaido University, Japan



## KEYNOTE LECTURES

Tuesday, 24 September

---

2.40 pm

Elucidation of Gas Adsorption  
Behavior through the Combination  
of Computational Science and  
Synchrotron Radiation Experiments

Prof. Hideki Tanaka

Kyoto University, Japan



2.40 pm

Highly efficient electrosorption for  
inorganic and metal ions removal  
with novel low-dimensional carbon-  
based nanocomposites in aqueous  
solutions

Prof. Ruey-An Doong

National Tsing Hua University,  
Taiwan



Wednesday, 25 September

---

10.40am

Edge-site-free and topological-  
defect-rich graphene mesosponge  
for battery-related applications

Prof. Hiroto Nishihara

Tohoku University, Japan



Thursday, 26 September

---

11.20am

Continuous Chromatographic  
Downstream Processing of  
Biopharmaceuticals

Prof. Jose Paulo Mota

Universidade NOVA de Lisboa,  
Portugal

## POSTER PROGRAMME

**Table 6: Poster Presentation**

No.	Submission ID / Poster ID	TITLE	Salutation	Last Name	First Name
<b>Category 1 (○): Adsorption Modelling, Simulation and Catalysis</b>					
1	S10041 / C1.01	Competitive Adsorption of Carbon Monoxide and Carbon Dioxide on Platinum Species Supported on Cerium Dioxide – Computational Study	Prof.	Nikolova	Rositca
2	S10118 / C1.02	Multiscale study of dual reflux pressure swing adsorption process for CO <sub>2</sub> capture by computational mass transfer	Prof.	Li	Wenbin
<b>Category 2 (●): Fundamentals of Adsorption</b>					
<b>Category 3 (□): Synthesis of Novel Adsorbent and Other Topics</b>					
1	S10095 / C3.01	Preparation of solid waste-based Zeolites and CO <sub>2</sub> adsorption evaluation	Mr	Luo	Lei
2	S10077 / C3.02	Formation of Carbon Frameworks and Nanoporosities by Pyrolysis of $\pi$ -Conjugated Ionic Liquids.	Mr	Seki	Toshinori
3	S10126 / C3.03	Surface Functionalized of Watermelon Rind Based Activated Carbon with CuN <sub>2</sub> O <sub>6</sub> for Amoxicillin Removal: F-Test for Isotherm and Kinetic Models	Dr.	Mohamad Yusop	Mohamad Firdaus
4	S10119 / C3.04	Adsorption and Removal of Cs ions by Newly Synthesized Prussian Blue Embedded in Mesoporous Silica Nanofibers	Prof.	Lee	Taek Seung
5	S10013 / C3.05	Comparative ultramicro pore analysis with positron annihilation lifetime spectroscopy (PALS) and Ar adsorption at 87 K	Mr	Kubo	Kei
6	S10038 / C3.06	The IUPAC universal standard archive file for adsorption data	Prof.	Silvestre – Alberio	Joaquin
7	S10120 / C3.07	Martensitic Transition of Blue Phase Mesocrystals	Prof.	Jin	Hyeong Min
8	S10113 / C3.08	Measurement of aromatics diffusivity within high-silica zeolites in sub- and super-critical fluid of naphthene	Dr.	Nakasaka	Yuta
<b>Category 4 (■): Adsorption for Energy Related Applications</b>					
1	S10071 / C4.01	Development of zirconium-based MOF with high C <sub>2</sub> H <sub>6</sub> /C <sub>2</sub> H <sub>4</sub> selectivity via incorporation of dense methyl groups into cavity-like pores	Mr	Oh	Kwang Hyun

<b>Category 5 (Δ): Adsorption for Environmental and Bio-applications</b>					
1	S10072 / C5.01	Discovery of highly effective metal-organic frameworks for radon removal via high throughput computational screening and experiments	Mr	Oh	Kwang Hyun
2	S10075 / C5.02	Covalent Organic Polymers with Amine and Triazine Functionality for CO <sub>2</sub> Adsorption and Conversion to Cyclic Carbonates	Mr	Ryoum	Kyu-Min
3	S10091 / C5.03	Adsorption Equilibria and Kinetics of O <sub>2</sub> , N <sub>2</sub> , and CO <sub>2</sub> among Binder and Binderless Zeolite LiX Pellets	Prof.	Lee	Chang-Ha
4	S10125 / C5.04	Oxygen-Enriched Rattan Based Activated Carbon via Cu <sub>2</sub> O <sub>6</sub> -Surface Modification for Enhanced Chloramphenicol Removal: Optimization and F-Test Study	Prof.	Ahmad	Mohd Azmier
5	S10111 / C5.05	Simulation and experiment of vacuum pressure swing adsorption process for CO <sub>2</sub> capture from flue gas	Mr.	Niu	Zhaoyang
6	S10051 / C5.06	Hexanoyl Glycol Chitosan/Tannic Acid Thermogels: Tailorable Mechanical, Adhesive, and Biofunctional Properties for Biomedical Applications	Prof.	Cho	Woo Kyung
7	S10139 / C5.07	A Study on Brining Process for Regeneration of Ion Exchange Resin. Part I: Pre-Treatment And Brining	Dr.	Yeoh	Fei Yee
8	S10137 / C5.08	Modeling and Performance Evaluation of Mercury Removal from Synthetic Sanitary Landfill Leachate using Square-pitched 3D-printed Natural Zeolite Permeable Reactive Barrier (PRB)	Dr.	Eusebio	Ramon Christian
9	S10134 / C5.09	Water Vapor Adsorption by Surface Modified Using Propanol Silica Gel and Measuring Its Capacity	Ms.	Chuah	Mui Ling



<b>Category 6 (▲): Advanced Materials for Adsorption</b>					
1	S10067 / C6.01	A Polyzwitterionic@MOF Hydrogel with Exceptionally High Water Vapor Uptake for Efficient Atmospheric Water Harvesting	Dr.	Yan	Jian
2	S10055 / C6.02	Surface-modified Activated Carbon Fiber for Improving Adsorption Uptake of Dimethyl Methylphosphonate	Mr	Shin	Hanwool
3	S10032 / C6.03	Sorption Properties of Ethanol Molecules by Structurally Flexible Coordination Polymers (ELM-11)	Mr	Inomata	Kaito
4	S10056 / C6.04	Enhancement of CO <sub>2</sub> Sorption Performance of CaO-based Adsorbent and Its Application to Hydrogen Production	Mr	Kim	Pilseok
5	S10054 / C6.05	Composite Adsorbent of Cu-BTC and Activated Carbon: Its Humid Air Stability and CO <sub>2</sub> Adsorption Performance	Mr	Chae	Hyun min
6	S10028 / C6.06	One Pot Synthesis Of Fe <sub>3</sub> O <sub>4</sub> -Chilli Carbon Composite For The Removal Of Methylene Blue, Paracetamol, And Nickel Ions From Aqueous Solution	Dr.	Thabede	Patience
7	S10131 / C6.07	Carbon quantum dots as essence of hybrid carbon nanostructure for photo-induced disinfection and purified water generation	Dr.	Wang	Zheng-Min
8	S10008 / C6.08	PTFE Hydrophobic Surface Treatment on Endoscope Lens by Dip Coating & Spin Coating	Dr.	Yeoh	Fei Yee
9	S10140 / C6.09	Uric Acid Adsorption by Amine Functionalized Mesoporous Silica	Dr.	Yeoh	Fei Yee

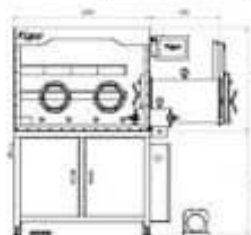
## NOTES

## Standard Gloveboxes

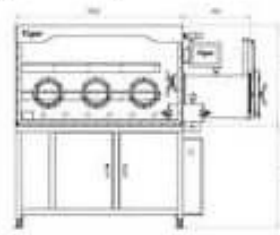


### Features

- Patented Leak Free Sealing Technology <math><0.001\text{vol\%/h}</math>
- High Efficiency Purification System
- Accurate O<sub>2</sub> & H<sub>2</sub>O Analysis <math><1\text{ppm}</math>
- Length: 1200/1500/1800/2400mm



1200mm



1500mm

## Standardized, Modular And Custom-Made Glove Boxes

- Chemical Synthesis Gloveboxes
- OLED/OPV Glovebox
- Lithium Battery & Supercapacitor Glovebox
- Additive Manufacturing Glovebox
- Laser Welding Glovebox

### Optional Accessories

- Oxygen Analyzer
- Moisture Analyzer
- Protector for Moisture/Oxygen Analyzer
- Oil Pump
- Dry Pump
- Oil for Vacuum Pump
- Air Conditioner
- Freezer
- Heat/Cold Trap
- Hot Plate
- Heating Antechamber (Cylindrical)
- T-shaped Antechamber
- Static Eliminator
- Spin Coater
- etc.



# MICROTRAC

## PARTICLE CHARACTERIZATION

Particle Size Distribution  
Specific Surface Area  
Pore Size Distribution Measurement  
Gas & Vapor Adsorption  
Breakthrough Curve Measurement  
High Pressure Gas Adsorption  
Catalyst Evaluation  
Mercury Porosimetry  
Density Measurement



# METEK®

Potentiostat  
Galvanostat  
Electrochemical Test System  
Rotating Disk Electrode (RDE)  
Rotating Ring Disk Electrode (RRDE)



 Princeton  
Applied  
Research


 solartron  
analytical


 its®

**INTERSCIENCE SDN. BHD.**

2, Jalan Sg Kayu Ara 32/38, Berjaya Industrial Park, 40460 Shah Alam, Selangor.

Tel : +60 3 7802 9060 Fax : +60 3 7802 9061 Email: info@its-interscience.com

 interscience

 Interscience Sdn Bhd



www.its-interscience.com

**Dynamic Vapor Sorption (DVS)** is a gravimetric technique that measures how quickly and how much of a vapor/solvent/gas is sorbed by a solid sample. This is done by varying the concentration surrounding the sample and recording the resultant change in mass. Employed in a range of industries, SMS instrumentation offers water, organic solvents, and gas sorption capabilities across a wide range of temperatures and sub to atmospheric pressures.

**DVS Intrinsic Plus**



**DVS Adventure**



**DVS Resolution**



**DVS Endeavour**



**DVS Discovery**

**DVS Carbon**

**DVS Vacuum**



**Available Features**

	<b>DVS Intrinsic+</b>	<b>DVS Adventure</b>	<b>DVS Resolution</b>	<b>DVS Endeavour</b>	<b>DVS Discovery</b>	<b>DVS Carbon</b>	<b>DVS Vacuum</b>
Temperature range (°C)	20-40	5-85	5-85	10-70	10-70	5-85	10-70
Optional in-situ sample preheater (°C)		200	200	200	200	200	400
Simultaneous sample measurement	1	1	1	5	2	1	1, 2
Co-adsorption of two molecules			2 vapors	2 vapors		H <sub>2</sub> O/CO <sub>2</sub>	2 gases/vapors
Water vapor sorption kinetics & isotherms	✓	✓	✓	✓	✓	✓	✓
Carrier gas – atmosphere flow based	✓	✓	✓	✓	✓	✓	
200x color video/microscopy accessory		✓	✓	✓	✓		
Fiber optic/Raman spectroscopy accessory		✓	✓	✓	✓		
Organic vapor sorption kinetics & isotherm			✓	✓	✓		✓
Speed of sound organic vapor sensor			✓	✓	✓		
CO <sub>2</sub> gas sorption						✓	✓
Compatible with NH <sub>3</sub> , SO <sub>2</sub> , H <sub>2</sub> S							✓
High vacuum capabilities							✓

# THE EXPERT IN SCIENCE AND TECHNOLOGY OF SMALL PARTICLES

## 5 THINGS WE DO BEST



**BREAKTHROUGH ANALYZER (BTA)**  
A Compact, Versatile, High-Performance  
Selective Adsorption System



**3 FLEX**  
high-performance adsorption  
analyzers for measuring surface  
area, pore size, and pore volume of  
powders and particulate materials.



**GAT SCIENTIFIC**  
Sole Distributor Malaysia

## CONNECT WITH US:

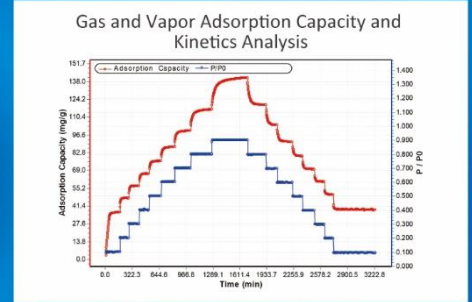
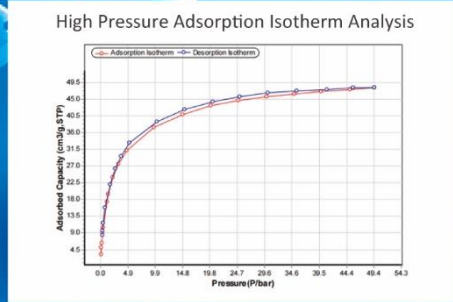
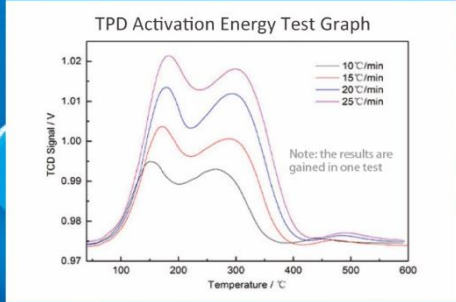
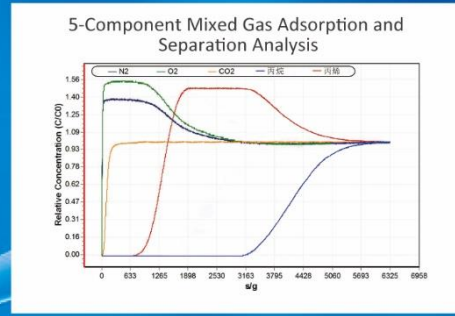
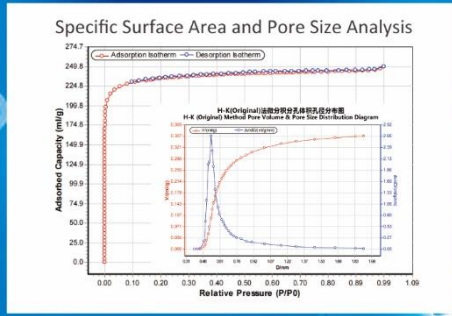
Accelerate your application with our expert support. Benefit from our functional lab's in-depth sample analysis and our team's technical expertise

[www.gatscientific.com](http://www.gatscientific.com) | Tel: 03 51319886 | Email: [info@gatscientific.com](mailto:info@gatscientific.com)

# SORPTION SEPARATION CHARACTERIZATION SOLUTION



**BSD INSTRUMENT**  
FOCUS ON SORPTION



## BSD-660 Advanced Specific Surface Area and Micropore Size Analyzer

## BSD-MAB Multi-component Adsorption Breakthrough Curve Analyzer

- BET SSA and Meso-, Micro-pore analysis;
- High throughput: Up to 12 analytic ports;
- Full automation: No manual handling;
- Eliminate He pollution on micropore analysis;



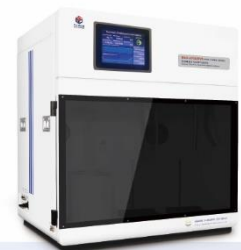
- Multi-component gas, vapor adsorption and separation;
- PSA and TSA analysis;
- Competitive adsorption analysis;
- Polluted air pollution analysis;



## BSD-C200 Automatic Chemisorption Analyzer

## BSD-PH Automatic High Pressure and Temperature Gas Sorption Analyzer

## BSD-VVS&DVS Multi-station Gravimetric Gas/Vapor Sorption Analyzer



- ◆ TPD/TPO/TPR/Pulse Titration;
- ◆ Automatic double heater;
- ◆ Auto-cycle adsorption lifetime analysis;

- ◆ Support 20MPa, 50MPa and 69MPa sorption;
- ◆ Support temp from 77K to 1,373K sorption;

- ◆ High throughput: 4 or 8 analytic stations;
- ◆ Equal pressure adsorption kinetics;
- ◆ Vacuum and dynamic method in one;
- ◆ Auto cycle adsorption analysis;



**BSD INSTRUMENT**  
FOCUS ON SORPTION

# POROUS MATERIAL ADSORPTION SEPARATION EVALUATION METHODS AND STEPS

**Volumetric**

**Gravimetric**

**1 Basic Data**  
Specific Surface Area  
Pore volume  
Pore size

Standard Gas (Meso)  
BSD-PS/660S

Standard Gas (Micro)  
BSD-PM/660M

**2 Adsorption Amount**  
Adsorption Capacity Assessment

Standard or Combustible Gas (0-1 bar)  
BSD-660 Series

Corrosive Gas (0-1bar)  
BSD-PMC

High Pressure Gas (0-200bar)  
BSD-PH

Ultra High Pressure Gas (0-690bar)  
BSD-PHU

Organic/Water Vapor (0-1bar)  
BSD-VVS/DVS/VVS&DVS

**3 Adsorption Rate**  
Adsorption Kinetic Assessment

Gas/Vapor (0-1bar)  
BSD-VVS/DVS/VVS&DVS

High Pressure Gas (0-200bar)  
BSD-PHE

**5 Competitive Adsorption**  
Multi Component Selective Adsorption Assessment

Multi Component Breakthrough  
BSD-MAB (MASS)  
GAS+GAS; GAS+VAPOR; VAPOR+VAPOR

Multi Component High Pressure Adsorption  
BSD-PHM (MASS)

Membrane Separation Test  
BSD-PB

Multi Component Theory Prediction  
SOFTWARE

**4 Adsorbent Service Life**  
Cycling Adsorption Assessment

High Pressure Gas (0-100bar)  
BSD-PH/PHE/PHEM

Gas/Vapor (0-1bar)  
BSD-VVS/DVS/VVS&DVS   
Cycling PSA/TSA Analysis