

## **JIN SHANG**

Trained as a chemical engineer, I specialize in adsorption-based gas separation technology for various energy and environmental applications, including carbon capture to decarbonize power generation and industrial processes, natural gas purification, hydrogen purification, and removal of ambient toxic gases/vapors (e.g., NO<sub>x</sub> and VOCs). My research is focused on understanding the fundamental physical chemistry of the molecular adsorption process via combined experimental and computational methods, in order to engineer designer adsorbents, develop adsorption processes, and advance the adsorption science underpinning separation, catalysis, sensing, and storage. Thanks to the opportunity of working in an interdisciplinary school for over 8 years, I gained unique insights/perspectives, expertise, and experiences in approaching and solving complex problems through working closely with colleagues in diverse fields of STEM and beyond (including areas of chemistry, physics, biology, mechanical engineering, electrical engineering, data science, etc.), economics, and policy. One of the biggest challenges of our times – climate change – presents an opportunity for my research to provide solutions of mitigation by carbon capture, utilization, and storage (CCUS). I believe the way to addressing any grand challenge is to identify the need for every aspect of solution, and accordingly build an interdisciplinary team led by talents with interdisciplinary minds. I aspire to take on the challenges and lead the effort to nurture and foster next-generation talents with multidimensional visions and knowledge, who can apply innovative technological skills to solve real world problems.

### **Current Appointment**

Associate Professor (tenured), School of Energy and Environment, City University of Hong Kong

Member, Low-Carbon and Climate Impact Research Centre (LCCIC)

Office: YEUNG-G5447 Email: [jinshang@cityu.edu.hk](mailto:jinshang@cityu.edu.hk); Tel: +852 3442 7714

### **Academic Qualifications**

2009-2013 PhD (Chemical Engineering) The University of Melbourne, Australia

2007-2009 M.E (Environmental Engineering) Northeastern University, China

2003-2007 B.E (Environmental Engineering) Northeastern University, China

### **Working Experience**

07/2022 – now Associate Professor, School of Energy and Environment, City University of Hong Kong, Hong Kong SAR

09/2016 – 06/2022 Assistant Professor, School of Energy and Environment, City University of Hong Kong, Hong Kong SAR

05/2016 – 08/2016 Postdoctoral Fellow, Georgia Institute of Technology, US

03/2013 – 03/2016 Postdoctoral Research Fellow, The University of Melbourne, Australia

### **Selected Awards & Honors**

2024 IACC-SMS Carbon Capture Award for Mid-career Researcher by The IACC (International Association for Carbon Capture) and SMS (Surface Measurement Systems)

2023 Invited attendance for Nobel Prize Symposium 193 in Karlskoga, Sweden

2023	The 2023 University Alliance in Talent Education Development (UAI TED) Faculty Exchange Scholarship (UAI TED)
2023	Stanford's top 2% most highly cited scientists 2023
2023	The 2023 IChemE & CCST Young Investigator (YI) Award (IChemE and Elsevier)
2023	The 2023 RINENG Young Investigator (YI) Award by <i>Results in Engineering</i> (Elsevier)
2022	ISTP-Bogen Young Scientist Award by International Congress on Separation and Purification Technology (ISTP)
2022	Stanford's top 2% most highly cited scientists 2022
2020	Young Researcher Award by AIChE and Association of Pacific Rim Universities (APRU)
2014	The Chancellor's Prize for Excellence in the PhD Thesis, The University of Melbourne, Australia
2013	John Melvin Memorial Prize for Best PhD Thesis in the School of Engineering 2013, The University of Melbourne, Australia
2013	Chinese Government Award for Outstanding Self-Financed Students Abroad
2012	Melbourne International Research Scholarship, Australia
2012	Melbourne International Fee Remission Scholarship, Australia
2011	CO2CRC Postgraduate Scholarship, Australia
2009	Monash Graduate Scholarship, Australia
2009	Monash International Postgraduate Research Scholarship, Australia

### **Summary of Internal Services, Professional Organization Roles, Editorial Roles, and Professional Services**

#### **Internal Services:**

- Member of University Research Committee (University level)
- Deputy Member (Human Research – General) of the Human and Artefacts Ethics Sub-Committee (University level)
- Member of the Gateway Education Programme Committee (University level)
- College of Science College Grade Review Committee (University level)
- Panel member of Student Contest Support Fund (University level)
- Chair of School Research Committee (School level)
- UoA Coordinator of the School for Research Assessment Exercise (RAE) 2026 (School level)
- Member of Outreach and Promotion Committee (School level)
- Member of Research Degree Programme Committee (School level)
- Coordinator of School Faculty Lunch Research Colloquia (School level)
- Member of MSc Program Committee (School level)
- Member of Undergraduate Admission Committee (School level)
- Member of School Laboratory Safety Management Committee (School level)
- Member of School Greater China Initiative (School level)
- Member of Sustainability Stream under School Graduate Studies Committee (School level)

#### **Professional Organization Roles:**

- Member of International Adsorption Society
- Member of International Zeolite Association
- Senior Member of International Association for Carbon Capture

**Selected Editorial Roles:**

- Senior Editor, *Carbon Technologies* (Cambridge Prisms), since 2024.
- Associate Editor (Separation Processes), *Frontiers in Chemical Engineering*, since 2023.
- Promotion Editor, *Frontiers of Chemical Science & Engineering*, since 2023.
- Editorial board member, *Purification*, since 2023.
- Editorial board member, *Carbon Capture Science & Technology*, since 2022.
- Editorial board member (Editor in Air Pollution section), *Atmosphere*, since 2022.
- Editorial board member, *Journal of Atmospheric & Earth Sciences*, since 2017.
- Guest Editor of *Carbon Capture Science & Technology* for a special issue “2023 IChemE & CCST Distinguished Investigator Award”, 2023.
- Guest Editor of *Separation and Purification Technology* for a special issue "2023 Greater Bay Area Symposium on Separation and Purification Technology and The 2nd Greater Bay Area Symposium on Membranes and Membrane Processes (GBA-SPT-MMP2023)", 2023.
- Guest Editor of *Atmosphere* for a special issue "Flue Gas Desulfurization, Denitrification, and CO<sub>2</sub> Capture", 2023.
- Guest Editor of *Atmosphere* for a special issue “Flue Gas Desulfurization”, 2021.
- Guest Editor of *Frontiers in Chemical Engineering* for a special issue “CO<sub>2</sub> Adsorption and Capture Processes”, 2021.
- Guest Editor of *Frontiers in Chemical Engineering* for a special issue “Tuning the Structure and Function of Metal-Organic Frameworks for Sustainable Environmental Applications”, 2021.
- Guest Editor of *Environment International* for a special issue “Advanced functional materials for environmental applications”, 2019.

**Selected Professional Services:**

- Grants accessor for the Australian Research Council (ARC) Centres of Excellence, ARC Discovery Projects (DP), ARC Discovery Early Career Researcher Award (DECRA), and ARC Future Fellowships, since 2016.
- Grants accessor for the Australian Synchrotron Beamtime and Australian Centre for Neutron Scattering Beamtime, since 2016.
- Award assessor for the Hong Kong Green Innovations Awards (HKGIA) in 2018, 2019, 2021, 2022 and 2023.
- Grants accessor for Hong Kong Innovation and Technology Fund, since 2019.
- Accessor for Kathleen Lonsdale Fellowship 2021.
- Session Chair of Synthesis and Applications of Zeolites, the 22nd Chinese Zeolite Conference, Luoyang, P.R. China, 2023.
- Organizing Committee Member of the “Carbon Negative: Biochar” symposium at the 2023 Global ESG Forum, NUS, Singapore, 2023.
- Organizing Committee Member and Session Chair of GBA-SPT 2023, Elsevier, virtual, 2023.
- Organizing Committee Member of the Asia Pacific Biochar Conference (APBC 2022), Seoul, Korea, 2022.
- Organizing Committee Member of the 20th International Conference on Heavy Metals in the Environment (ICHMET 2020), Korea, 2020.

- Organizing Committee Member of the 3rd International Conference on Bioresources, Energy, Environment, and Materials Technology, Hong Kong, 2019.
- Organizing Committee Member of the 4th International Conference on Contaminated Land, Ecological Assessment and Remediation, Hong Kong, 2018.
- Session Chair of Ionic Liquids and Extractive Separation, the 1st International Congress on Separation and Purification Technology (ISPT 2022), Elsevier, virtual, 2022.
- Session Chair of Materials for CO<sub>2</sub> Capture, the 13th International Conference on Fundamentals of Adsorption (FOA13), Cairns, Australia, 2019.
- Session Chair of Sustainable Energy, the 1st Engineering Sustainable Development Conference, Seoul, Korea, 2019.
- Reviewer for over 300 academic journals including *Nature Sustainability*, *Nature Communication*, *Journal of the American Chemical Society*, *Angewandte Chemie*, *Advanced Science*, *Chemical Science*, *Environmental Science & Technology*, *Chemical Engineering Journal*, *Chemical Engineering Science*, *AIChE journal*, *Industrial & Engineering Chemistry Research*, *Separation and Purification Technology*, *Adsorption* etc.

## **Summary of Grants Record**

### **Research Grants:**

(Total amount of grants secured: HKD 14,447,195 equivalent)

1. Research Grants Council (Hong Kong) General Research Fund (GRF) Grant: “Selective gas adsorption by single-atom extraframework transition metal sites regularly arranged inside porous crystalline matrices”; Project number: CityU 11310223; Duration: 01/01/2024~31/12/2026; amount: HKD 877,079; capacity: PI.
2. Innovation and Technology Commission (Hong Kong) Innovation and Technology Fund (ITF) Grant: “Development of Molecular Sieve for Oxygen Production with Low Power Consumption”; Project number: GHP/228/21GD; Duration: 01/07/2023~30/06/2025; amount: HKD 1,713,000; capacity: PI.
3. Research Grants Council (Hong Kong) General Research Fund (GRF) Grant: “Develop Robust Metal-Organic Frameworks-based Adsorbents for Toxic and Corrosive Gases: Importance of Specific Binding Sites and Adsorption-Desorption Mechanism”; Project number: CityU 11317722; Duration: 01/01/2023~31/12/2025; amount: HKD 870,000; capacity: PI.
4. Environment and Conservation Fund (Hong Kong Government EPD): “Recycling yard waste into new-generation biochar adsorbents for CO<sub>2</sub> and VOCs removal”; Project number: ECF 104/2021; Duration: 01/03/2022~31/08/2023; amount: HKD 1,179,557; capacity: Co-PI.
5. Green Tech Fund (Hong Kong Government EPD): “Portable and low-cost sensors for the ambient air monitoring of BTEX and other volatile organic compounds”; Project number: GTF2020201830; Duration: 01/04/2022~31/03/2025; amount: HKD 5,686,750; capacity: Co-PI (sharing 15% of the award).
6. Green Tech Fund (Hong Kong Government EPD): “Turning Water into the Source of Solar Hydrogen via Photocatalyst Panel”; Project number: GTF202020204; Duration: 01/04/2022~31/03/2025; amount: HKD 2,876,449; capacity: Co-PI (sharing 35% of the award).
7. Research Grants Council (Hong Kong) Early CAREER Scheme (ECS) Grant: “Development of Active Sieving Technologies for High-Efficacy Molecular Separation”; Project number: CityU 21301817; Duration: 01/01/2018~31/12/2020; amount: HKD 630,585; capacity: PI.

8. Research Grants Council (Hong Kong) General Research Fund (GRF) Grant: “Development of Molecular Encapsulation Technologies for Gas Storage without Sustained Pressure”; Project number: CityU 11215518; Duration: 01/01/2019~30/06/2022; amount: HKD 530,563; capacity: PI.
9. National Natural Science Foundation of China Research Grant: “Regulating Guest Admission and Release in Microporous Materials”; Project number: 21706224; Duration: 01/01/2018~31/12/2020; amount: RMB 250, 000 (HKD 305,000); capacity: PI.
10. International Science and Technology Cooperation Topics of 2022 Guangdong Province Science and Technology Plan Project: “Construction and Mechanism Study on Simultaneous CO<sub>2</sub> Reduction and Ammonium Wastewater Oxidation on MOFs-based Photocatalyst Composites”; Project number: N/A; Duration: 01/04/2022~31/03/2024; amount: RMB 500, 000; capacity: Co-PI.
11. International Science and Technology Cooperation Topics of 2022 Guangdong Province Science and Technology Plan Project: “Development of Metal-Organic Framework Materials for Non-destructive Cryopreservation of Red Blood Cells”; Project number: N/A; Duration: 01/06/2022~31/05/2024; amount: RMB 500, 000; capacity: Co-PI.
12. Shenzhen Basic Research Grant: “Lithium Adsorbent for N<sub>2</sub> Removal”; Project number: JCYJ20170307090749744; Duration: 01/06/2017~31/05/2019; amount: RMB 500, 000 (HKD 610,000); capacity: PI.
13. Shenzhen Basic Research Grant: “Capture and enrichment of low-grade methane by adsorption technologies”; Project number: JCYJ20180307123906004; Duration: 01/03/2019~31/07/2021; amount: RMB 300, 000 (HKD 366,000); capacity: PI.
14. Shenzhen Basic Research Grant: “Study of ‘gating effect’ in microporous materials for high-performing gas separation and storage”; Project number: JCYJ20190808181003717; Duration: 01/06/2020~31/05/2023; amount: RMB 300, 000 (HKD 366,000); capacity: PI.
15. Shenzhen Basic Research Grant: “Study on zeolite molecular sieves-based adsorbents for low-temperature NO<sub>2</sub> removal”; Project number: JCYJ20210324134006019; Duration: 01/11/2021~31/10/2024; amount: RMB 600, 000 (HKD 750,000); capacity: PI.
16. City University of Hong Kong (CityU) Applied Research Grant: “Carbon Dioxide Capture and Conversion into Liquid Hydrocarbon Products”; Project number: 9667217; Duration: 01/03/2020~28/02/2022; amount: HKD 150, 000; capacity: PI.
17. CityU Teaching Development Grant: “Providing Solution to Mitigation of Criteria Air Pollutants via Cooperative Learning”; Project number: 6000716; Duration: 01/01/2021~12/31/2022; amount: HKD 240, 000; capacity: PI.
18. CityU Start-up Grant for New Faculty: “Development of Molecular Trapdoor Metal-organic Framework Adsorbents for Natural Gas Purification”; Project number: 7200524; Duration: 01/01/2017~03/01/2019; amount: HKD 200, 000; capacity: PI.
19. CityU Strategic Research Grant: “Development of  $\pi$ -Complexation Adsorption Technology for High-Efficiency Nitrogen Dioxide (NO<sub>2</sub>) Capture Directly from Air”; Project number: CityU 11306419; Duration: 01/09/2019~31/08/2021; amount: HKD 100, 000; capacity: PI.
20. CityU Strategic Research Grant: “Development of  $\pi$ -Complexation Adsorption Technology for High-Efficiency Carbon Dioxide (CO<sub>2</sub>)”; Project number: CityU 11308420; Duration: 01/09/2020~31/08/2022; amount: HKD 100, 000; capacity: PI.
21. CityU Match-up Grant for Mainland grants: Project number: 9680209; Duration: 01/09/2017~30/11/2022; amount: HKD 224, 690; capacity: PI.
22. Australian Research Council Training Centre for Liquefied Natural Gas Futures: Project number: IC150100019; Duration: 15/04/2016~15/04/2021; amount: AUD 4,571,797 (HKD 27,4,30,782); capacity: Co-PI (8 Co-PI apart from PC representing 5 universities and I was the sole Co-PI

representing the University of Melbourne; the actual amount money controlled by me was AUD 307,113 (HKD 1,842,678)).

23. Highly competitive merit-based beamtimes at the synchrotron and neutron facilities of ANSTO (The Australian Nuclear Science and Technology Organisation), Duration: 30/11/2011~30/01/2020; amount: AUD 804,600 (HKD 4,827,600); capacity: PI.

### **Consultancy:**

1. Recovery of waste ammonia from ORRC1 for beneficial use in the context of Hong Kong, for Oscar Bioenergy Joint Venture, 402,500 HKD, capacity: PI, 01/01/2022~31/05/2022.
2. Study on pipeline leakage to estimate its GHG emission contribution to Towngas, for Towngas, 199,400 HKD, capacity: PI, 01/07/2022~31/12/2022.

### **Knowledge transfer:**

1. HK Tech 300 seed fund, “Organic Cation-exchanged Zeolite Y as Selective Gas Adsorbents for Energy Carrier Gas Separation and Purification”, capacity: advisor, 2021.
2. HK Tech 300 seed fund, “A Novel Reusable Antivirus Non-Toxic Visible-light Driven Photocatalytic ZIF-8 Loaded Fabric for Air Cleaning”, capacity: co-advisor, 2021.

### **List of Scholarly Presentations**

#### **List of Invited Scholarly Presentations**

1. “Selective Adsorption for Gas Separation”, 04/24/2024, Invited Seminar at National Cheng Kung University, Tainan, Taiwan, National Cheng Kung University.
2. “Selective Adsorption for Gas Separation”, 01/12/2023, Invited Seminar at Ewha Womans University, Seoul, Korea, Ewha Womans University.
3. “Development of robust adsorbents for low-temperature NO<sub>x</sub> adsorption”, 17/11/2023~20/11/2023, “111” Project Workshop on Functional Porous Materials & Reticular Chemistry of Porous Polymers, Haikou, China, Jilin University and Northeast Normal University.
4. “Selective gas adsorption for carbon capture and NO<sub>2</sub> capture”, 11/10/2023~14/10/2023, the 22nd Chinese Zeolite Conference, Luoyang, P.R. China, the Chinese Zeolite Association.
5. “Selective gas adsorption for carbon capture and NO<sub>2</sub> capture”, 07/06/2023, Invited Seminar at Peking University Shenzhen Graduate School, Shenzhen, China, Peking University Shenzhen Graduate School.
6. “Development of robust adsorbents with balanced binding affinity for ambient temperature NO<sub>2</sub> adsorption”, 28/3/2023, “111” Project Workshop on New Perspectives of Functional Nanoporous Materials, Changchun, China, Jilin University (Virtual).
7. “Introduction to Carbon Capture Technologies”, 04/11/2022, Invited Talk for EPD’s Training Programme “Carbon Capture, Utilization and Storage”, Hong Kong, Environmental Protection Department (EPD). (**Invited Speaker and Panelist**)
8. “Adsorption Technology for Energy and Environmental Applications”, 17/08/2022, Invited Seminar at Northeast Agricultural University, Harbin, China (Virtual), Northeast Agricultural University.
9. “Adsorption Technology for Energy and Environmental Applications”, 30/05/2022, Invited Seminar at Dalian University of Technology, Dalian, China (Virtual), Dalian University of Technology.
10. “Development of robust adsorbents with balanced binding affinity for ambient NO<sub>2</sub> adsorption”, 22/05/2022~27/05/2022, FOA 14, Colorado, United States (Virtual), International Adsorption Society.
11. “Carbon capture by adsorption technology for achieving carbon neutrality”, 14/12/2021,

- International Expert Seminar Series, Changchun, China (Virtual), Jilin University.
12. “Adsorption Technology for Sustainable Energy and Environmental Applications”, 09/06/2021, Global Internship Lecture by Korea University 2021, Seoul, Korea (Virtual), Korea University.
  13. “Visible light photocatalytic degradation of gaseous formaldehyde by ‘carbonized’ porous coordination polymer (ZIF-8)”, 11/05/2021~11/05/2021, The Asia Pacific Biochar Conference (APBC2021), Hong Kong (virtual), The Hong Kong Polytechnic University. (**Keynote Speaker**)
  14. “Adsorption-Based Gas Separation and Storage for Environmental and Energy Applications”, 12/01/2021, YONSEI-CBE International Workshop Series: Separation Technology 2021, Seoul, Korea (Virtual), Yonsei University.
  15. “Transition Metal Inserted Porphyrin Metal-Organic Frameworks as  $\pi$ -backbonding Adsorbents for NO<sub>2</sub> Removal”, 15/12/2020~17/12/2020, the 2nd Engineering Sustainable Development Conference, Seoul (Virtual), AIChE's Institute for Sustainability & the Association of Pacific Rim Universities (APRU). (**Keynote Speaker**)
  16. “Adsorption Technology for Sustainable Energy and Environmental Applications”, 03/01/2020, Research Visit to Henan University, Henan, China, Henan University.
  17. “Adsorption Technology for Sustainable Energy and Environmental Applications”, 12/12/2019~13/12/2019, the 1st Engineering Sustainable Development Conference, Seoul, Korea, AIChE's Institute for Sustainability & the Association of Pacific Rim Universities (APRU).
  18. “Adsorption Technology for Gas Separation and Storage”, 17/8/2019, Research Visit to Yantai University, Yantai, China, Colleague of Chemistry and Chemical Engineering at Yantai University.
  19. “Active Adsorbents for Molecular Separation”, 24/10/2019, Research Visit to Zhejiang University, Hangzhou, China, College of Chemical and Biological Engineering at Zhejiang University.
  20. “Revisit the molecular sieving behaviour in zeolite LTA for high-performance gas separation”, 11/8/2019~14/8/2019, “111” Project Workshop (III) New Perspectives of Functional Nanoporous Materials, Changchun, China, Jilin University.
  21. “Revisit the molecular sieving behaviour in zeolite LTA for high-performance gas separation”, 12/06/2019~15/06/2019, the 3rd International Conference on Bioresources, Energy, Environment, and Materials Technology, Hong Kong, The Hong Kong Polytechnic University.
  22. “Adsorption Technology for Gas Separation and Storage”, 27/04/2019~28/04/2019, the Sixth Wuhan University International Forum for Interdisciplinary Sciences and Engineering Featured Forum, Wuhan, China, Wuhan University.
  23. “Adsorption Technology for Gas Separation and Storage”, 10/04/2019~13/04/2019, the 5th Silk Road International Spring Symposium for Distinguished Young Scholars (XJTU), Xi'an, China, Xi'an Jiaotong University.
  24. “Smart Adsorbents for High-Performance Biogas Upgrading”, 02/04/2019~04/04/2019, Mission Innovation-The 2nd International Conference on Sustainable Biofuels, Yantai, China, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences, Department of Science and technology of Shandong Province and Yantai Municipal People's Government.
  25. “Active Adsorbents for Molecular Separation”, 27/12/2018~28/12/2018, Fudan-Guanghua International Forum for Young Scholars, Shanghai, China, Fudan University.
  26. “Reduction of Harmful Gas Emissions by Adsorption Separation Technology”, 26/11/2018~28/11/2018, Asia Resilience Center (ARC) Conference 2018: Resilience and New Leadership in the WORLD, Seoul, Korea, Korea University.
  27. “Active Adsorbents for Molecular Separation”, 19/08/2018~24/08/2018, “111” Project Workshop (III) New Perspectives of Functional Nanoporous Materials, Changchun, China, Jilin University.
  28. “Reduction of Harmful Gas Emissions by Adsorption Separation Technology”, 16/8/2018~18/8/2018,

- the 4th International Conference on Contaminated Land, Ecological Assessment and Remediation, Hong Kong, The Hong Kong Polytechnic University.
29. “Active Adsorbents for Molecular Separation”, 25/06/2018, Research Visit to Korea Biochar Research Centre, Seoul, Korea, Korea University.
  30. “Active Adsorbents for Molecular Separation”, 11/05/2018~14/05/2018, The Yong Scholar of China and Abroad-the 3<sup>rd</sup> session of “Xinghai” Forum, Harbin, China, Harbin Engineering University.
  31. “The transport of CO<sub>2</sub> over the sea using a proper carrier”, 27/04/2018, the International Conference on Global Sustainability and the Belt and Road Initiative: Engaging the World from Hong Kong, Hong Kong, The Chinese University of Hong Kong. **(Panelist)**
  32. “Active Adsorbents for Molecular Separation”, 30/03/2018~31/03/2018, The 2nd Wuhan University of Technology Yong Scholars Forum, Wuhan, China, Wuhan University of Technology.
  33. “Active Adsorbents for Molecular Separation”, 08/01/2018, Research Visit to Xinjiang University, Urumqi, China, Xinjiang University.
  34. “Active Adsorbents for Molecular Separation”, 22/11/2017, Indoor Air Quality and VOC Clean Technology Workshop, Seoul, Korea, Hanyang University.
  35. “Active Adsorbents for Molecular Separation”, 20/11/2017, Research Visit to Inorganic Materials for Separation and Reaction Lab, Seoul, Korea, Korea University.
  36. “Active Adsorbents for Molecular Separation”, 29/06/2017, Research Visit to Institute of Process Engineering (IPE), Chinese Academy of Sciences (CAS), Beijing, China, Chinese Academy of Sciences (CAS).
  37. “Active Adsorbents for Molecular Separation”, 28/06/2017, Research Visit to Institute of Beijing Computational Science Research Center, Beijing, China, Beijing Computational Science Research Center.
  38. “Active Adsorbents for Molecular Separation”, 27/06/2017, Research Visit to Department of Environmental Science and Engineering, Tsinghua University, Beijing, China, Tsinghua University.
  39. “Active Adsorbents for Molecular Separation”, 26/06/2017, Research Visit to School of Mechanical Engineering, University of Science and Technology Beijing, Beijing, China, University of Science and Technology Beijing.
  40. “Active Adsorbents for Molecular Separation”, 19/06/2017, Research Visit to School of Chemistry and Chemical Engineering, Shihezi University, Urumqi, China, Shihezi University.
  41. “Active Adsorbents for Molecular Separation”, 06/06/2017, Research Visit to School of Chemical Engineering and Technology, China University of Mining and Technology, Xuzhou, China, China University of Mining and Technology.
  42. “Active Adsorbents for Molecular Separation”, 25/12/2016, Research Visit to School of Resources and Civil Engineering, Northeastern University, Shenyang, China, Northeastern University.
  43. “Active Adsorbents for Molecular Separation”, 27/10/2016, Research Visit to School of Chemical Science and Engineering, Tongji University, Shanghai, China, Tongji University.
  44. “Molecular Sieving: does size really matter?”, 21/11/2013~22/11/2013, 2013 Australian Synchrotron User Meeting, Melbourne, Australian Synchrotron, Australia, Australian Synchrotron (ANSTO). **(Plenary Presentation)**

#### **List of Other Scholarly Presentations**

1. The 2023 Gordon Research Conference on Nanoporous Materials and Their Applications: Expanding the Horizons of Porous Materials Design and Applications, Andover, NH., the US, 06/08/2023~11/08/2023. (Poster)
2. The 1st Mediterranean Conference on Porous Materials, Crete, Greece, 17/05/2023~19/05/2023.



(Oral Presentation)

3. The the 1st International Congress on Separation and Purification Technology (ISPT 2022), Elsevier, virtual, 10/12/2022~14/12/2022. (Oral Presentation)
4. Nature Conference: Waste Management and Valorization for a Sustainable Future, Korea, 26/10/2021~28/10/2021. (Poster Presentation)
5. The 8th Conference of the Federation of European Zeolite Associations (FEZA 2021), UK, 05/07/2021~09/07/2021. (Oral Presentation)
6. The 20th International Conference on Heavy Metals in the Environment (ICHMET 2020), FKI Tower, Seoul, Korea, 25/10/2020~29/10/2020. (Poster)
7. The 20th Chinese Zeolite Conference, Zhejiang, China, 22/10/2019~25/10/2019. (Oral Presentation)
8. The 9th International Zeolite Conference, Perth, Australia, 07/07/2019~12/07/2019. (Two Oral Presentations)
9. FOA13, Cairns, Australia, 26/05/2019~31/05/2019. (Oral Presentation)
10. The 6th International Conference on Multifunctional, Hybrid and Nanomaterials, Sitges, Spain, 11/03/2019~15/03/2019. (Oral Presentation)
11. 8th Pacific Basin Conference on Adsorption Science and Technology, Hokkaido University, Sapporo, Japan, 04/09/2018~06/09/2018. (Oral Presentation)
12. International Symposium on Zeolite and Microporous Crystals, Yokohama, Japan, 05/08/2018~09/08/2018. (Oral Presentation)
13. The 31st Annual Conference of Chinese Chemical Society, Hangzhou, China, 05/05/2018~08/05/2018. (Oral Presentation)
14. The 19<sup>th</sup> Chinese Zeolite Conference, Wuhan, China, 24/10/2017~28/10/2017. (Poster)
15. COPSXI, Avignon, France, 14/05/2017~18/05/2017. (Poster)
16. The 2017 Gordon Research Conference on Nanoporous Materials and Their Applications: The Path from Novel Nanoporous Materials to Commercial Applications, Andover, NH., the US, 06/08/2017~11/08/2017. (Poster)
17. The 6th Asia-Oceania Conference on Sustainable and Green Chemistry (AOC-SGC6), Hong Kong, China, 27/11/2016~30/11/2016. (Oral Presentation)
18. The Fifth International Congress on Sustainability Science & Engineering (ICOSSE '16), Suzhou, China, 22/10/2016~27/10/2016. (Oral Presentation)
19. FOA12, Friedrichshafen, Germany, 29/05/2016~03/06/2016. (Oral Presentation)
20. FOA12, Friedrichshafen, Germany, 29/05/2016~03/06/2016. (Poster)
21. APCChE Congress 2015, Melbourne, Australia, 27/09/2015~01/10/2015. (Poster)
22. International Symposium on Zeolite and Microporous Crystals, Sapporo, Japan, 28/06/2015~02/07/2015. (Oral Presentation)
23. The 2nd Euro-Asia Zeolite Conference, Nice, France, 25/01/2015~28/01/2015. (Poster)
24. CO2CRC Research Symposium 2014, RACV Resort, Torquay, Victoria, 25/11/2014~26/11/2014. (Poster)
25. CO2CRC Research Symposium 2013, Wrest Point Tasmania, Hobart, Tasmania, 19/11/2013~20/11/2013. (Oral Presentation)
26. AOFSRR, Egret Himeji, Japan, 21/09/2013~24/09/2013. (Poster)
27. FOA11, Baltimore, the US, 19/05/2013~24/05/2013. (Oral Presentation)
28. FOA11, Baltimore, the US, 19/05/2013~24/05/2013. (Poster)
29. CO2CRC Research Symposium 2012, Palmer Coolum Resort, Sunshine Coast, Queensland, 27/11/2012~29/11/2012. (Poster)
30. The 243 American Chemical Society Meeting & Exposition, San Diego, the US,

25/03/2012~29/03/2012. (Oral Presentation)

31. Supercomputing 11, Seattle, the US, 12/11/2011~18/11/2011. (Poster)

32. CO2CRC Research Symposium 2011, Adelaide, SA, 29/11/2011~01/12/2011. (Oral Presentation)

33. CHEMECA2010, Adelaide, Australia, 26/09/2010~29/09/2010. (Poster)

## **Research Highlights**

### **Media Coverage**

- “能捕捉空氣污染物二氧化氮的‘海綿’”，頭條日報, 22-2-2022.  
(<https://hd.stheadline.com/news/daily/hk/972040/>)
- “Accelerating clean energy innovations: Green fuel and photocatalysts”, Advertorial in *Nature*, 2022.  
(<https://www.nature.com/articles/d42473-022-00061-w>)
- “Tackling air pollution with new approaches”, Communications and Public Relations Office City University of Hong Kong, 2021.  
(<https://www.cityu.edu.hk/media/news/2021/04/12/tackling-air-pollution-new-approaches>)
- “能捕捉空氣污染物二氧化氮的‘海棉’”，香港城大研創, 2021.  
(<https://mp.weixin.qq.com/s/Sf4cMKV3hL7HiMVq9aIDXw>)  
“Sponge” that can capture air pollutant nitrogen dioxide, Office of the Vice-President (Research & Technology), 2021.  
(<https://www.cityu.edu.hk/research/stories/2021/05/27/sponge-can-capture-air-pollutant-nitrogen-dioxide>)
- “新型光催化劑無需化石燃料室溫下從空氣中的氮產生氨”，香港城大研創, 2021.  
(<https://mp.weixin.qq.com/s/WA7UNMTf2UMfLkDqngMQwQ>)  
“New photocatalyst produces ammonia from atmospheric nitrogen at room temperature without fossil fuels”, Office of the Vice-President (Research & Technology), 2021.  
(<https://www.cityu.edu.hk/research/stories/2021/08/26/new-photocatalyst-produces-ammonia-atmospheric-nitrogen-room-temperature-without-fossil-fuels>)
- “In the fight against climate change, hydrogen could be the answer to Hong Kong’s quest for greener fuel”, South China Morning Post, 2019.  
(<https://www.scmp.com/comment/letters/article/3029939/fight-against-climate-change-hydrogen-could-be-answer-hong-kongs>)

### **Journal Cover**



<i>Chemical Science</i>	<i>Advanced Materials</i>	<i>Green Chemistry</i>	<i>Nano Letters</i>	<i>ChemComm</i>	<i>ChemComm</i>
2020,11,6670.	2019,31(12),1806774.	2019,21,1267.	2017,17,1.	2015,51(79),14716.	2014, 50(35),4544.



*CCS&T*      *ACS ES&T Engineering*

2023, 8, 100126.      2023, 3, 9, 1297

## List of Publications

**Journal papers:** (Total citations and *h*-index: 5851 and 48 (Google Scholar))

### 2024

1. Tian, Y., Tao, Z., Sun, M., Wang, T., Li, L., Gu, Q., **Shang, J.\***, Tunable Gas Admission via a “Molecular Trapdoor” Mechanism in a Flexible Cationic Metal–Organic Framework Featuring 1D Channels”. *Small* 2024, 2400064.
2. Tian, Y., Tao, Z., Liu, C., Sun, M., Chang C., Gu, Q., Li, L., **Shang, J.\***, Adjusting gate-opening behavior in a rigid cage-type “molecular trapdoor” metal-organic framework via anion modulation”. *Chemical Engineering Journal* 2024, 486, 150293.
3. Wu, C.,\* ..., **Shang J.** et al., A comprehensive review of carbon capture science and technologies. *Carbon Capture Science & Technology* 2024, 11, 100178.

### 2023

4. Shang S., Tian Y., Yang C., Wang C., Chen X., Ye D., **Shang J.\***, Ambient temperature NO<sub>2</sub> removal by adsorption on robust DMOFs: regulating water stability, acid stability, and NO<sub>2</sub> capacity by methyl functionalization. *Chemical Engineering Journal* 2023, 477, 147255.
5. Tao, Z., Tian, Y., Ou, S.Y., Gu, Q., **Shang J.\***, Direct air capture of CO<sub>2</sub> by metal cation-exchanged LTA zeolites: effect of the charge-to-size ratio of cations”. *AIChE Journal* 2023, 69(8), e18139. *Editor’s choice*
6. Tao, Z., Tian, Y., Hanif, A., Chan, V., Gu, Q., **Shang J.\***, Metal cation-exchanged LTA zeolites for CO<sub>2</sub>/N<sub>2</sub> and CO<sub>2</sub>/CH<sub>4</sub> separation: The roles of gas-framework and gas-cation interactions. *Carbon Capture Science & Technology* 2023, 8, 100126. *Journal inside front cover*
7. Yang, J., Dehdari, L., Guo, Y., Guo, J., Singh, R., Xiao, P., **Shang, J.\***, Zavabeti, A.,\* Li, K.\*, Hydrogen capture using zeolite 3A for pipeline gas deblending. *Chemical Engineering Journal* 2023, 466, 143224.
8. Abid, H.R.\*, Aamir H., Keshavarz A., **Shang J.\***, Iglauer S., CO<sub>2</sub>, CH<sub>4</sub>, and H<sub>2</sub> Adsorption Performance of the Metal–Organic Framework HKUST-1 by Modified Synthesis Strategies. *Energy & Fuels* 2023, 37, 7260–7267.
9. Sun, M., Aamir, H., Wang, T., Gu, Q., **Shang, J.\***, Ambient temperature NO<sub>2</sub> removal by reversible NO<sub>2</sub> adsorption on copper-based metal-organic frameworks (MOFs)-derived nanoporous adsorbents. *Separation and Purification Technology* 2023, 314, 123563.
10. Tian, Y., Kong, M., Tao, Z., Yang, C., Shang, S., Gu, Q., Tsang, D.C.W., Li, L., **Shang, J.\***, Efficient Adsorption Removal of NO<sub>2</sub> by Covalent Triazine Frameworks with Fine-Tuned Binding Sites. *Journal of Hazardous Materials* 2023, 441, 129962.

11. Sun, M., Ku, K., Tao, Z., Wang, T., Wen, C., Hanif, A., Wang, C., Gu, Q.\*, Sit, P.\*, **Shang J.\***, Ambient Temperature NO<sub>2</sub> Removal by Adsorption on Transition Metal Ion-exchanged Chabazite Zeolites. *Results in Engineering* 2023, 18, 101134.
12. Shang, S., Yang, C., Tian, Y., Tao, Z., Smith, M., Zhang, H., Zhang, L., Li, L., Gu, Q., Zhou, H., Ok, Y.\* **Shang, J.\***, Designing multivariate porphyrin-based metal-organic frameworks with Ni/Co dual-metal atom sites for cooperative NO<sub>2</sub> capture and NO retention. *Separation and Purification Technology* 2023, 320, 124080.
13. Shi C., Wang, T., Roy, S., Chopra, S., Chen, G., **Shang, J.\*** Tian, J., Ok. Y., From waste to resource: Surface-engineered spent coffee ground as a sustainable adsorbent for oil–water separation. *ACS ES&T Engineering* 2023, 3, 9, 1297. *Supplementary cover*
14. Liu, B.\*, Lu, W., Liu, Y., Feng, Q., Huang, Y., **Shang, J.**, Zhu, Y., Dong, J., Synthesis of dodecylbenzene via the alkylation of benzene and 1-dodecene over mesopore Beta zeolites. *AIChE Journal* 2023, 69(11), e18201.
15. Huang, Y., Wang, M., Huang, Y., **Shang, J.**, Liu, B.\*, Mesoporous Beta Zeolites with Controlled Distribution of Brønsted Acid Sites for Alkylation of Benzene with Cyclohexene. *Results in Engineering* 2023, 19, 101377.
16. Bai, S., Tian, Y., Zeng, Y., Chao, L.C., Pan, A., Ho, T.C., Chen, S., **Shang, J.**, Tso, C.Y.\*, Adsorption-based Atmospheric Water Harvesting by Passive Radiative Condensers for Continuous Decentralized Water Production. *Applied Thermal Engineering* 2023, 225, 120163.
17. Xiong, F., Ji, C., Gan, S., Liang, P., Huang, Y., **Shang, J.**, **Liu, B.\*** Dong, J., Tuning the mesoscopically structured ZSM-5 nanosheets for the alkylation between toluene and methanol. *AIChE Journal* 2023, 69 (6), e18054.
18. Tian, Y., Wu, H., Hanif, A., Niu, Y., Yin, Y., Gu, Y., Chen, Z., Gu, Q., Ng, Y.H.\*, **Shang, J.\***, Li, L.\*, Liu, M., N-doped graphitic carbon encapsulating cobalt nanoparticles derived from novel metal-organic frameworks for electrocatalytic oxygen evolution reaction. *Chinese Chemical Letters* 2023, 34(8), 108056.

## 2022

19. Shang, S., Yang, C., Sun, M., Tao, Z., Hanif A., Gu, Q., **Shang, J.\***, CO<sub>2</sub> capture from wet flue gas using transition metal inserted porphyrin-based metal-organic frameworks as efficient adsorbents. *Separation and Purification Technology* 2022, 301, 122058.
20. Igalavithana, A. D., You, S., Zhang, L., **Shang, J.**, Lehmann, J., Wang, X., Zhu, Y.-G., Tsang, D. C.W., Park, Y.-K., Hou, D., Ok, Y. S., Progress, barriers, and prospects for achieving a hydrogen society and opportunities for biochar technology. *ACS ES&T Engineering* 2022, 2 (11), 1987.
21. Liu, Y., Yang, D., **Shang J.**, Zhou J., Chang, V., Direct Decomposition of NO over 8MR in High Silica Cu-LTA Zeolite: A DFT Study on Reaction Mechanisms, Thermodynamics and Kinetics. *Molecular Catalysis* 2022, 530, 112602.
22. Fang, L., Gou, G., **Shang, J.**, Liu, M., Gu, Q., Li, L.\*, Regulating the Spin State of Single-Atom Doped Covalent Triazine Frameworks for Efficient Nitrogen Fixation. *Journal of Colloid and Interface Science* 2022, 627, 931.
23. Tang, Z., Ma, D., Chen, Q., Wang, Y., Sun, M., Lian, Q., **Shang, J.**, Wong, P.K., He, C., Xia, D., Wang, T.\*, Nanomaterial-Enabled Photothermal-Based Solar Water Disinfection Processes: Fundamentals, Recent Advances, and Mechanisms. *Journal of Hazardous Materials* 2022, 437, 129373.
24. Sun, M., Zhu, X., Wu, C., Masek, O., Wang, C.-H., **Shang, J.**, Ok, Y.S., Tsang, D.C.W.\*, Customizing high-performance molten salt induced biochar from biomass waste for CO<sub>2</sub>/N<sub>2</sub> separation. *Fuel Processing Technology* 2022, 234, 107319.

25. Wu, H., Utomo, W.P., Tian, Y., Mak, C.H., Chung, H.Y., Hsu, H.Y., **Shang, J.**, Ng, Y.H.\*, Enhanced Visible-light-driven Heterogeneous Photocatalytic CO<sub>2</sub> Methanation by Cu<sub>2</sub>O@Cu-MOF-74 Thin Film. *ChemPhysMater* 2022, 2(2), 126.
26. Xia D., Chen Q., Jiao Y., Lian Q., Sun M., He C., **Shang J.\***, Wang T., A Modified Flower Pollen-based Photothermocatalytic Process for Enhanced Solar Water Disinfection: Photoelectric effect and Bactericidal Mechanisms. *Water Research* 2022, 217, 118423.
27. Yang, C., Shang, S., Gu, Q., **Shang, J.**, Li, X.\*, Metal-organic framework-derived carbon nanotubes with multi-active Fe-N/Fe sites as a bifunctional electrocatalyst for zinc-air battery. *Journal of Energy Chemistry* 2022, 66, 306.

## 2021

28. Shang, S., Wen, C., Yang, C., Tian, Y., Wang, C., **Shang, J.\***, The low-temperature NO<sub>2</sub> removal by tailoring metal node in porphyrin-based metal-organic frameworks. *Science of The Total Environment* 2021, 801, 149710.
29. Shang, S., Xiong, W., Yang, C., Johannessen, B., Liu, R., Hsu, H., Gu, Q., Leung, M., **Shang, J.\***, Atomically Dispersed Iron Metal Site in a Porphyrin-Based Metal-Organic Framework for Photocatalytic Nitrogen Fixation. *ACS Nano* 2021, 15(6), 9670.
30. Shang, S., Yang, C., Tian, Y., Tao, Z., Hanif, A., Sun, M., Wong, S., Wang, C., **Shang, J.\***, NO<sub>2</sub> Removal by Adsorption on Transition-Metal-Based Layered Double Hydroxides. *ACS ES&T Engineering* 2021, 1(3), 375.
31. Hanif, A., Sun, M., Wang, T., Shang, S., Tsang, D.C.W., **Shang, J.\***, Ambient NO<sub>2</sub> Adsorption Removal by Mg-Al Layered Double Hydroxides and Derived Mixed Metal Oxides. *Journal of Cleaner Production* 2021, 313, 127956.
32. Sun, M., Hanif, A., Wang, T., Yang, C., Tsang, D.C.W., **Shang, J.\***, Chrysanthemum flower like silica with highly dispersed Cu nanoparticles as a high-performance NO<sub>2</sub> adsorbent. *Journal of Hazardous Materials* 2021, 418, 126400.
33. He, J., Mousavi, S., Li, G., Li, Z., Mokarizadeh, A., **Shang, J.**, May, E.F., Li, G.\*, The rational design of Li-doped nitrogen adsorbents for natural gas purification. *Physical Chemistry Chemical Physics* 2021, 23, 971.
34. Wang, T., Dissanayake, P., Sun, M., Tao, Z., Han, W., An, N., Gu, Q., Xia, D., Tian, B., OK, Y., **Shang, J.\***, Adsorption and visible-light photocatalytic degradation of organic pollutants by functionalized biochar: Role of iodine doping and reactive species. *Environmental Research* 2021, 197, 111026.
35. Guo, J., Hanif, A., **Shang, J.\***, Deka, B., Ning, Z., An, A., PAA@ZIF-8 incorporated nanofibrous membrane for high-efficiency PM<sub>2.5</sub> capture. *Chemical Engineering Journal* 2021, 405, 126584.
36. Wang, C., **Shang, J.**,<sup>#</sup> Tian, L., Zhao, H., Wang, P., Feng, K., He, G., Liu, J.Z., Zhu, W., Li, G.\*, Direct Identification of HMX via Guest-induced Fluorescence Turn-on of Molecular Cage. *Chinese Chemical Letters* 2021, 32, 4006. <sup>#co-first authors</sup>
37. Wang, T., Tian, B., Han, B., Ma, D., Sun, M., Hanif, A., Xia, D. and **Shang, J.\***, Recent advances on porous materials for synergetic adsorption and photocatalysis. *Energy & Environmental Materials* 2021,5, 711.
38. Li, Y., Shang, S., **Shang, J.**, Wang, W.\*, Toxicity assessment and underlying mechanisms of multiple metal organic frameworks using the green algae *Chlamydomonas reinhardtii* model. *Environmental Pollution* 2021, 291, 118199.
39. Peng, Y., Sun, Y., Hanif, A., **Shang, J.**, Shen, Z., Hou, D., Zhou, Y., Chen, Q., Ok, Y., Tsang, D.C.W.\*, Design and fabrication of exfoliated Mg/Al layered double hydroxides on biochar support. *Journal of Cleaner Production* 2021, 289, 125142.

40. Zhu, X., Wan, Z., Tsang, D.C.W.,\* He, M., Hou, D., Su, Z., **Shang, J.**, Machine learning for the selection of carbon-based materials for tetracycline and sulfamethoxazole adsorption. *Chemical Engineering Journal* 2021, 406, 126782.
41. Yang, Z., Gu, Y., Yuan, B., Tian, Y., **Shang, J.**, Tsang, D.C.W., Liu, M., Gan, L., Mao, S., Li L.\*, Thio-groups decorated covalent triazine frameworks for selective mercury removal. *Journal of Hazardous Materials* 2021, 403, 123702.

## 2020

42. Shang, S., Yang, C., Wang, C., Qin, J., Li, Y., Gu, Q., **Shang, J.\***, Transition-Metal-Containing Porphyrin Metal–Organic Frameworks as  $\pi$ -Backbonding Adsorbents for NO<sub>2</sub> Removal. *Angewandte Chemie International Edition* 2020, 59 (44), 19680.
43. Shang, S., Tao, Z., Yang, C., Hanif, A., Li, L., Tsang, D.C.W., Gu, Q., **Shang, J.\***, Facile synthesis of CuBTC and its graphene oxide composites as efficient adsorbents for CO<sub>2</sub> capture. *Chemical Engineering Journal* 2020, 393, 124666.
44. **Shang, J.\***, Hanif, A., Li, G., Xiao, G., Liu, J. Z., Xiao, P., Webley, P.A., Separation of CO<sub>2</sub> and CH<sub>4</sub> by Pressure Swing Adsorption Using a Molecular Trapdoor Chabazite Adsorbent for Natural Gas Purification. *Industrial & Engineering Chemistry Research* 2020, 59 (16), 7857-7865.
45. Wang, T., Wang, Y., Sun, M., Hanif, A., Wu, H., Gu, Q., Ok, Y., Tsang, D.C.W., Li, J., Yu, J., **Shang, J.\***, Thermally Treated Zeolitic Imidazolate Framework-8 (ZIF-8) for Visible Light Photocatalytic Degradation of Gaseous Formaldehyde. *Chemical Science* 2020, 11, 6670-6681. *Journal back cover*
46. Zhu, X., Tsang, D.C.W., Wang, L., Su, Z., Hou, D., Li, L., **Shang, J.\***, Machine learning exploration of the critical factors for CO<sub>2</sub> adsorption capacity on porous carbon materials at different pressures. *Journal of Cleaner Production* 2020, 273, 122915.
47. Wang, Z., Goyal, N., Liu, L., Tsang, D.C.W., **Shang J.**, Liu, W., Li, G.\*, N-doped porous carbon derived from polypyrrole for CO<sub>2</sub> capture from humid flue gases. *Chemical Engineering Journal* 2020, 396, 125376.
48. Igalavithana, A., Choi, S., Dissanayake, P., **Shang, J.**, Wang, C., Yang, X., Kim, S., Tsang, D.C.W., Lee, K., Ok, Y.\*, Gasification biochar from biowaste (food waste and wood waste) for effective CO<sub>2</sub> adsorption. *Journal of Hazardous Materials* 2020, 39,121147.
49. Li, J., Zhang, H., Wang, B., Yu, X., **Shang, J.**, Yu, J.\*, Carbon Dots in Porous Materials: Host - Guest Synergy for Enhanced Performance. *Angewandte Chemie International Edition* 2020, 59 (44), 19390.
50. Igalavithana, A., Choi, S., **Shang, J.**, Hanif, A., Dissanayake, P., Tsang, D.C.W., Kwon, J., Lee, K., Ok, Y.\*, Carbon dioxide capture in biochar produced from pine sawdust and paper mill sludge: Effect of porous structure and surface chemistry. *Science of The Total Environment* 2020, 739, 139845.
51. Tian, M., Liu, S. J., Wang, L., Ding, H., Zhao, D., Wang, Y., Cui, J., Fu, J., **Shang, J.\***, Li, G., Complete Degradation of Gaseous Methanol over Pt/FeOx Catalysts by Normal Temperature Catalytic Ozonation (NTCO). *Environmental Science & Technology* 2020, 54(3) 1938-1945.
52. Xiao, K.,<sup>#</sup> Wang, T.,<sup>#</sup> Sun, M., Hanif, A., Gu, Q., Tian, B., Jiang, Z., Wang. B., Sun, H., **Shang, J.\***, Wong, P.K.\*, Photocatalytic Bacterial Inactivation by a Rape Pollen-MoS<sub>2</sub> Biohybrid Catalyst: Synergetic Effects and Inactivation Mechanisms. *Environmental Science & Technology* 2020, 54(1) 537-549. <sup>#co-first authors</sup>
53. Chen, S., Cao, Y., Tsang, D.C.W., Tessonnier, J., **Shang, J.**, Hou, D., Shen, Z., Zhang, S., Ok, Y., Wu, K.\*, Effective Dispersion of MgO Nanostructure on Biochar Support as a Basic Catalyst for Glucose Isomerization. *ACS Sustainable Chemistry & Engineering* 2020, 8 (18), 6990-7001.

54. Yu, I.K.M., Hanif, A., Tsang, D.C.W., Yip, A., Lin, K., Gao, B., Ok, Y., Poon, C.S., **Shang, J.\***, Tailoring Acidity and Porosity of Alumina Catalysts via Transition Metal Doping for Glucose Conversion in Biorefinery. *Science of The Total Environment* 2020, 704, 135414.
55. Yu, I.K.M., Hanif, A., Tsang, D.C.W., **Shang, J.\***, Su, Z.; Song, H., Ok, Y., Poon, C.S., Tuneable functionalities in layered double hydroxide catalysts for thermochemical conversion of biomass-derived glucose to fructose. *Chemical Engineering Journal*, 2020, 383, 122914.
56. Cao, L., Yu, I.K.M., Xiong, X., Tsang, D.C.W.,\* Zhang, S., Clark, J., Hu, C., Ng, Y., **Shang, J.**, Ok, Y., Biorenewable hydrogen production through biomass gasification: A review and future prospects. *Environmental Research* 2020, 186, 109547.
57. Li, B., Zheng, T., Ran, S., Sun, M., **Shang, J.**, Hu, H., Lee, P., Boles, S.T.\* , Performance recovery in degraded carbon-based electrodes for capacitive deionization. *Environmental Science & Technology* 2020, 54(3), 1848-1856.
58. Kumar, P., Kim, K.,\* Lee, J., **Shang, J.**, Khazi, M., Kumar, N., Lisak, G., Metal-organic framework for sorptive/catalytic removal and sensing applications against nitroaromatic compounds. *Journal of Industrial and Engineering Chemistry* 2020, 84, 87-95.
59. Zhao, Z., Ling, C., Wang, D., Wang, J., Saczek, J., Pramana, S., Sridhar, S., **Shang, J.**, Xu, B., Tsang, D.C.W., Chen, J., Wang, S.\* , Liquid Marbles in Liquid. *Small* 2020, 16, 2002802.
60. Vikrant, K., Kim, K.,\* Szulejko, J., Boukhvalov, D., **Shang J.**, Rinklebe, J., Evidence of inter-species swing adsorption between aromatic hydrocarbons. *Environmental Research* 2020, 181, 108814.

## 2019

61. Sun, M., Gu, Q., Hanif, A., Wang, T., **Shang, J.\***, Transition metal cation-exchanged SSZ-13 zeolites for CO<sub>2</sub> capture and separation from N<sub>2</sub>. *Chemical Engineering Journal* 2019, 370, 1450.
62. Shang, S., Hanif, A., Sun, M., Tian, Y., Ok, Y., Yu, I.K.M., Tsang, D.C.W., Gu, Q., **Shang, J.\***, Novel M (Mg/Ni/Cu)-Al-CO<sub>3</sub> layered double hydroxides synthesized by aqueous miscible organic solvent treatment (AMOST) method for CO<sub>2</sub> capture. *Journal of Hazardous Materials* 2019, 373, 285-293.
63. Hanif, A., Sun, M., Shang, S., Tian, Y., Yip, A., Ok, Y., Yu, I.K.M., Tsang, D.C.W., Gu, Q., **Shang, J.\***, Exfoliated Ni-Al LDH 2D nanosheets for intermediate temperature CO<sub>2</sub> capture. *Journal of Hazardous Materials* 2019, 374, 365-371.
64. Hanif, A., Sun, M., Tao, Z., Liu, L., Tsang, D.C.W., Gu, Q., **Shang, J.\***, Silica Supported MgO as An Adsorbent for Pre-combustion CO<sub>2</sub> Capture. *ACS Applied Nano Materials* 2019, 2(10), 6565-6574.
65. He, Y., Sun, M., Zhao, Q., **Shang, J.\*** Tian, Y., Xiao, P., Gu, Q., Li, L., Webley, P.A., Effective Gas Separation Performance Enhancement Obtained by Constructing Polymorphous Core-Shell Metal-Organic Frameworks. *ACS Applied Materials & Interfaces* 2019, 11(33), 30234-30239.
66. Wang, S., Bai, P., Sun, M., Liu, W., Li, D., Wu, W., Yan, W., **Shang, J.\*** Yu, J.\* , Fabricating Mechanically Robust Binder-Free Structured Zeolites by 3D Printing Coupled with Zeolite Soldering: A Superior Configuration for CO<sub>2</sub> Capture. *Advanced Science*, 2019, 6(17), 1901317.
67. Wang, T., Sun, M., Sun, H., **Shang, J.\*** Wong P.K.\* , Efficient Z-Scheme Visible-Light-Driven Photocatalytic Bacterial Inactivation by Hierarchical MoS<sub>2</sub>-Encapsulated Hydrothermal Carbonation Carbon Core-Shell Nanospheres. *Applied Surface Science* 2019, 464, 43-52.
68. Tian, Y., Liang, G., Fan, T., **Shang, J.**, Shang, S., Ma, Y., Matsuda, R., Liu, M., Wang, M., Li, L., Kitagawa, S.\* , Grafting free carboxylic acid groups onto pore surface of 3D porous coordination polymers for high proton conductivity. *Chemistry of Materials* 2019, 31(20), 8494-8503.
69. Iacomi, P., Formalik, F., Marreiros, J., **Shang, J.**, Rogacka, J., Mohmeyer, A., Behrens, P., Ameloot, R., Kuchta, B., Llewellyn, P.L.\* , Role of structural defects in the adsorption and separation of C<sub>3</sub> hydrocarbons in Zr-fumarate-MOF (MOF-801). *Chemistry of Materials* 2019, 31(20), 8413-8423.

70. Xiang, H., Ameen, A., **Shang, J.**, Jiao, Y., Gorgojo, P., Siperstein, F., Fan, X.\*, Synthesis and modification of moisture-stable coordination pillared-layer metal-organic framework (CPL-MOF) CPL-2 for ethylene/ethane separation. *Microporous and Mesoporous Materials* 2019, 293, 109784.
71. Buruga, K., Song, H., **Shang, J.**, Bolan, N., Jagannathan, T., Kim, K.\*, A review on functional polymer-clay based nanocomposite membranes for treatment of water. *Journal of Hazardous Materials* 2019, 379, 120584.
72. Zhu, W., Guo, J., Agola, J., Croissant, J., Wang, Z., **Shang, J.**, Coker, E., Motevalli, B., Zimpel, A., Wuttke, S., Brinker, C.J.\*, Metal-Organic Framework Nanoparticle-Assisted Cryopreservation of Red Blood Cells. *Journal of the American Chemical Society* 2019, 141, 19, 7789-7796.
73. Zhu, W., Guo, J., Amini, S., Ju, Y., Agola, J., Zimpel, A., **Shang, J.**, Noureddine, A., Caruso, F., Wuttke, S., Croissant, J., Brinker, C.J.\*, SupraCells: Living Mammalian Cells Protected within Functional Modular Nanoparticle-Based Exoskeletons. *Advanced Materials* 2019, 31(25), 1900545.
74. Yin, H., **Shang, J.**, Choi, J., Yip, A.\*, Generation and extraction of hydrogen from low-temperature water-gas-shift reaction by a ZIF-8-based membrane reactor. *Microporous & Mesoporous Materials* 2019, 280, 347-356.
75. Yang, X., Yu, I.K.M., Cho, D., Chen, S., Tsang, D.C.W.\*, **Shang, J.**, Yip, A., Wang, L., Ok, Y., Tin-functionalized Wood Biochar as a Sustainable Solid Catalyst for Glucose Isomerization in Biorefinery. *ACS Sustainable Chemistry & Engineering* 2019, 7 (5), 4851-4860.
76. Lv, X., Hu, C., **Shang, J.**, Sit, P.H.L., Lam, F. L. Y., Teoh, W.Y\*, Enhanced photoelectrochemical charge transfer on Mn-doped CdS/TiO<sub>2</sub> nanotube arrays: The roles of organic substrates. *Catalysis Today* 2019, 355, 468-476.
77. Zhu, W., Guo, J., Croissant, J., **Shang, J.**, Agola, J., Ping, Y., Brinker, C.J.\*, Modular Metal-Organic Polyhedra Super-Assembly: from Molecular-Level Design to Targeted Drug Delivery. *Advanced Materials* 2019, 31 (12), 1806774. *Journal front cover*
78. Vellingiri, K., Deng, Y., Kim, K.,\* Jiang, J., Kim, T., **Shang, J.**, Ahn, W., Kukkar, D., Boukhvalov, D., Amine-Functionalized Metal–Organic Frameworks and Covalent Organic Polymers as Potential Sorbents for Removal of Formaldehyde in Aqueous Phase: Experimental Versus Theoretical Study. *ACS Applied Materials & Interfaces* 2019, 11 (1), 1426-1439.
79. Lv, X., Rodriguez, I., Hu, C., **Shang, J.**, Sit, P.H.L., Ye, C., Oskam, G., Teoh, W.Y.\*, Modulated anodization synthesis of Sn-doped iron oxide with enhanced solar water splitting performance. *Materials Today Chemistry* 2019, 12, 7-15.

## 2018

80. Gu, Q., **Shang, J.**,\* Hanif A., Li, G., Shirazian, S., Theoretical Study of Moisture-Pretreated Lithium as Potential Materials for Natural Gas Upgrading. *Industrial & Engineering Chemistry Research* 2018, 57 (45), 15512–15521.
81. **Shang, J.**,\* Shirazian, S., Facilitated Dissociation of Water in the Presence of Lithium Metal at Ambient Temperature as a Requisite for Lithium-Gas Reactions. *The Journal of Physical Chemistry C* 2018, 122, 16016-16022.
82. Rada, Z., Abid, H., Sun, H., **Shang, J.**, Li, J., He, Y., Liu, S., Wang, S.\*, Effects of -NO<sub>2</sub> and -NH<sub>2</sub> functional groups in mixed-linker Zr-based MOFs on gas adsorption of CO<sub>2</sub> and CH<sub>4</sub>. *Progress in Natural Science: Materials International* 2018, 28, 160-167.
83. Du, T., Fang, X., Liu, L., **Shang, J.**, Zhang, B., Wei, Y., Gong, H., Rahman, S., May, E.F., Webley, P.A., Li, G.\*, An optimal trapdoor zeolite for exclusive admission of CO<sub>2</sub> at industrial carbon capture operating temperatures. *Chemical Communications* 2018, 54 (25), 3134-3137.
84. Zhu, W., Xiang, G., **Shang, J.**, Guo, J., Motevalli, B., Durfee, P., Agola, J., Coker, E., Brinker, C.J.\*,



- Versatile Surface Functionalization of Metal–Organic Frameworks through Direct Metal Coordination with a Phenolic Lipid Enables Diverse Applications. *Advanced Functional Materials* 2018, 28 (16), 1705274.
85. Jooshani, S., Khansary, M.,\* Marjani, A., Shirazian, S., **Shang, J.**, Contaminant uptake by polymeric passive samplers: A modeling study with experimental validation. *Chemical Engineering Research and Design* 2018, 129, 231-236.
86. Yu, I.K.M., Tsang, D.C.W.,\* Su, Z., Yip, A., **Shang, J.**, Ok, Y., Kim, K., Poon, C.S., Contrasting Roles of Maleic Acid in Controlling Kinetics and Selectivity of Sn(IV)- and Cr(III)-catalyzed Hydroxymethylfurfural (HMF) Synthesis. *ACS Sustainable Chemistry & Engineering* 2018, 6 (11), 14264-14274.
87. Yu, I.K.M., Xiong, X., Tsang, D.C.W.,\* Wang, L., Hunt, A., Song, H., **Shang, J.**, Ok, Y., and Poon, C.S., Aluminium-Biochar Composites as Sustainable Heterogeneous Catalysts for Glucose Isomerisation in a Biorefinery. *Green Chemistry* 2019, 21, 1267-1281. *Journal front cover*
88. Yu, I.K.M., Tsang, D.C.W.,\* Yip, A., Hunt, A., Sherwood, J., **Shang, J.**, Song, H., Ok, Y., Poon, C. S., Propylene Carbonate and [gamma]-Valerolactone as Green Solvents Enhance Sn(IV)-Catalysed Hydroxymethylfurfural (HMF) Production from Bread Waste. *Green Chemistry* 2018, 20, 2064-2074.

## 2017

89. Li, G.,# **Shang, J.**,# Gu, Q., Awati, R., Grant, A., Jensen, N., Zhang, X., Sholl, D.S., Liu, J.Z., Webley, P.A., May, E.F.\*, Temperature-Regulated Guest Admission and Release in Microporous Materials. *Nature Communications* 2017, (8), 15777. #co-first authors
90. Du, T., Fang, X., Wei, Y., **Shang, J.**, Zhang, B., Liu, L.\*, Synthesis of Nanocontainer Chabazites from Fly Ash with a Template- and Fluoride-Free Process for Cesium Ion Adsorption. *Energy & Fuels* 2017, 31 (4), 4301-4307.
91. Cao, A., Zhu, W., **Shang, J.**, Klootwijk, J., Sudhölter, E., Huskens, J., de Smet, L.C.P.M.\*, Metal-Organic Polyhedra-Coated Si Nanowires for Sensitive Detection of Trace Explosives. *Nano Letters* 2017, 17, 1-7. *Journal front cover*
92. Perre, S., Gelin, P., Claessens, B., Calvo, A., Cousin, J., Remi, S., Duerinck, T., Baron, G., Palomino, M., Sánchez, L., Valencia, S., **Shang, J.**, Singh, R., Webley, P.A., Rey, F., Denayer, J.F.M.\*, Intensified biobutanol recovery using zeolites with complementary selectivity. *ChemSusChem* 2017, 10, 2968-2977.
93. Xie, K., He, Y., Zhao, Q., **Shang, J.**, Gu, Q., Qiao, G., Webley P.A.\*, Pd(0) loaded Zn<sub>2</sub>(AzoBDC)<sub>2</sub>(Dabco) as heterogeneous catalyst. *CrystEngComm* 2017, 19, 4182-4186.

## 2016

94. He, Y., **Shang, J.**,\* Gu, Q., Zhao, Q., Xie, K., Li, G., Singh, R.K., Xiao, P., Webley, P.A., Exchange Method Using Acid-Solvent Synergy for Metal–Organic Framework Synthesis (EASY-MOFs) Based on a Typical Pillar-Layered Parent Structure. *European Journal of Inorganic Chemistry* 2016, 1466.
95. **Shang, J.**,\* Li, G., Webley, P.A., Liu, J.Z.\*, A Density Functional Theory Study for the Adsorption of Various Gases on a Caesium Exchanged Trapdoor Chabazite. *Computational Materials Science* 2016, 122, 307.
96. He, Y., **Shang, J.**,\* Zhao, Q., Gu, Q., Xie, K., Li, G., Singh, R.K., Xiao, P., Webley, P.A., A Comparative Study on Conversion of Porous and Non-porous Metal-Organic Frameworks (MOFs) into Carbon-based Composites for Carbon Dioxide Capture. *Polyhedron* 2016, 120, 30-35.
97. Abid, H., Rada, Z.H., **Shang, J.**,\* Wang, S., Synthesis, Characterization, and CO<sub>2</sub> Adsorption Study of three Metal-Organic Frameworks (MOFs): MIL-53, MIL-96, and Amino-MIL-53. *Polyhedron* 2016,

120, 103-111.

98. Xu, D., Sun, L., Li, G., **Shang, J.**, Yang, R., Deng, W.\*, Methyllithium-Doped Naphthyl-Containing Conjugated Microporous Polymer with Enhanced Hydrogen Storage Performance. *Chemistry - A European Journal* 2016, 22, 7944.
99. Physick, A., Wales, D., Owens, S., **Shang, J.**, Webley, P.A., Mays, T., Ting, V.P.\*, Novel low energy hydrogen-deuterium isotope breakthrough separation using a trapdoor zeolite. *Chemical Engineering Journal* 2016, 288, 161.
100. Rada, Z.H., Abid, H., **Shang, J.**, Sun, H., He, Y., Webley, P.A., Liu, S., Wang, S.\*, Functionalised UiO-66 by single and binary (OH)<sub>2</sub> and NO<sub>2</sub> groups for uptake of CO<sub>2</sub> and CH<sub>4</sub>. *Industrial & Engineering Chemistry Research* 2016, 55 (29), 7924.

## 2015

101. **Shang, J.**,\* Li, G., Li, J., Li, L., Webley, P.A., Liu, J.Z.\*, Density Functional Theory Computational Study of Alkali Cation-Exchanged sod-ZMOF for CO<sub>2</sub>, N<sub>2</sub>, and CH<sub>4</sub> Adsorption. *The Journal of Physical Chemistry C* 2015, 119, 27449.
102. He, Y., **Shang, J.**,\* Gu, Q., Li, G., Li, J., Singh, R.K., Xiao, P., Webley, P.A., Converting 3D Rigid Metal-Organic Frameworks (MOFs) to 2D Flexible Networks via Linker Exchange for Enhanced CO<sub>2</sub>/N<sub>2</sub> and CH<sub>4</sub>/N<sub>2</sub> Separation. *Chemical Communications* 2015, 51 (79), 14716. *Journal inside back cover*
103. Wang, C.,# **Shang, J.**,# Lan, Y., Tian, T., Wang, H., Chen, X., Gu, J., Liu, J.Z., Wan, L., Zhu, W., Li, G.\*, Metal-Organic Polyhedra Cages Immobilized on a Plasmonic Substrate for Sensitive Detection of Trace Explosives. *Advanced Functional Materials* 2015, 25 (37), 6009. #co-first authors
104. Rada, Z., Abid, H., **Shang, J.**, He, Y., Webley, P.A., Liu, S., Sun, H., Wang, S.\*, Effect of amino functionality on uptake of CO<sub>2</sub>, CH<sub>4</sub> and selectivity of CO<sub>2</sub>/CH<sub>4</sub> on titanium based MOFs. *Fuel* 2015, 160, 318.
105. Chandrakumara, G., **Shang, J.**, Qiu, L., Fang, X., Antolasic, F., Li, D., Alan, T., Liu, J.Z.\*, Tuning the oxygen functional groups in reduced graphene oxide papers to enhance the electromechanical actuation. *RSC Advances* 2015, 5, 68052.

## 2014

106. **Shang, J.**, Li, G., Gu, Q., Singh, R., Xiao, P., Liu, J.Z., Webley, P.A.\*, Temperature Controlled Invertible Selectivity of Adsorption of N<sub>2</sub> and CH<sub>4</sub> by Molecular Trapdoor Chabazites. *Chemical Communications* 2014, 50 (35), 4544-4546. *Journal front cover*
107. **Shang, J.**, Li, G., Singh, R., Xiao, P., Danaci, D., Liu, J.Z., Webley, P.A.\*, Adsorption of CO<sub>2</sub>, N<sub>2</sub>, and CH<sub>4</sub> in Cs-exchanged chabazite: A combination of van der Waals density functional theory calculations and experiment study. *The Journal of Chemical Physics* 2014, 140, 084705.
108. Remy, T., Gobechiya, E., Danaci, D., Peter, S., Xiao, P., Tendeloo, L., Couck, S., **Shang, J.**, Kirschhock, C., Singh, R., Martens, J., Baron, G., Webley, P.A., Denayer, J.F.M.\*, Biogas upgrading through kinetic separation of carbon dioxide and methane over Rb- and Cs-ZK-5 zeolites. *RSC Advances* 2014, 4, 62511.
109. Chang, Z., Yan, W., **Shang, J.**, Liu, J.Z.\*, Piezoelectric properties of graphene oxide: a first-principles computational study. *Applied Physics Letters* 2014, 105, 023103.

## 2013

110. **Shang, J.**, Li, G., Singh, R., Xiao, P., Liu, J.Z., Webley, P.A.\*, Determination of Composition Range for Molecular Trapdoor Effect in Chabazite Zeolite. *The Journal of Physical Chemistry C* 2013,

117, 12841-12847.

111. Li, L., Yao, J., Xiao, P., **Shang, J.**, Feng, Y., Webley, P.A., Wang, H.\*, One-step fabrication of ZIF-8/polymer composite spheres by a phase inversion method for gas adsorption. *Colloid and Polymer Science* 2013, 291, 2711-2717.
112. Abid, H., **Shang, J.**, Ang, H., Wang, S.\*, Amino-Functionalised Zr-MOF Nanoparticle for Adsorption of CO<sub>2</sub> and CH<sub>4</sub>. *International Journal of Smart and Nano Materials* 2013, 4, 72-82.

## 2012

113. **Shang, J.**, Li, G., Singh, R., Gu, Q., Nairn, K., Bastow, T., Medhekar, N., Doherty, C., Hill, A., Liu, J.Z., Webley, P.A.\*, Discriminative Separation of Gases by a “Molecular Trapdoor” Mechanism in Chabazite Zeolites. *Journal of the American Chemical Society* 2012, 134, 19246-19253. *Spotlight Article* (featured in *Nature Chemistry* and 2000+ media outlets)

## 2010

114. **Shang, J.**, Li, G., Singh, R., Xiao, P., Liu, J.Z., Webley, P.A.\*, Potassium Chabazite – A Nano-Container for Gas Encapsulation. *The Journal of Physical Chemistry C* 2010, 114, 22025-22031.

## Patents:

**Shang, J.** and Tao, Z., “An adsorbent, its preparation and use” US Patent Application No. 18/534,934, Dec 11, 2023.

**Shang, J.** and Tao, Z., “一種吸附劑、其製備與用途” Chinese Patent Filing NO. 202410227190.4, Feb 29, 2024.

An, A., **Shang, J.**, Guo, J., Sun, J., Sun, M., Wong, P.W., “Method for fabricating Reusable Visible-light Driven Anti-virus Photocatalytic ZIF-8 Loaded Fabric for Air Cleaning” US Patent Filing NO. 63/495,737, April 12, 2023.

**Shang, J.**, Sun, M., and Wang, T., “Self-cleaning fabric and article” US Patent Publication No. US2023/0405572, December 21, 2023.

**Shang, J.**, Sun, M., and Wang, T., “A carbon nanowire, a fabric, a manufacturing method therefor, and an additive for a fabric” US Patent Filing NO. 17/835,392, June 8, 2022.

**Shang, J.**, Sun, M., and Wang, T., “便攜式一氧化氮發生器及其使用方法和其在吸入一氧化氮治療中的應用” Chinese Patent Filing NO. 202210563060.9, May 23, 2022.

**Shang, J.** and Tao, Z., “一種吸附劑及其製備方法與應用” Chinese Patent Filing NO. 202210484970.8, May 6, 2022.

**Shang, J.**, Sun, M., and Wang, T., “一種選擇性捕集 CO<sub>2</sub> 的吸附劑及其製備與應用 (An adsorbent for CO<sub>2</sub> capture from N<sub>2</sub> or CH<sub>4</sub>)” Chinese Patent Filing NO. 202111352460.7, November 16, 2021.

**Shang, J.**, Li, G., Wang, T., and Gu, Q., “一種氦氣純化的方法及其裝置 (A method for helium purification)” Chinese Patent Filing No. 201910433137.9, May 03, 2019.

**Shang, J.**, Singh, R., Li, G., and Webley, P.A. “An Improved Chabazite Adsorbent for Gas Separation” Australian Provisional Patent No. 20829846, August 23, 2011.

Hu, X., Dong, Y., Li, L., Jiang, B., Fu, Z., Ye, S., Zhu, M., and **Shang, J.** “A Technique of Preparing Bio-Flocculants” Chinese Patent No. CN 101327975, December 14, 2008.

**Books:**

Dissanayake, P.D., Palansooriya, K.N., Withana, P.A., Senadeera, S.S., Samaraweera, H., Wang, S., Yuan, X., Mašek, O., **Shang, J.**, Ok, Y.S., 2022. “Chapter 27 - Engineered biochar as a potential adsorbent for carbon dioxide capture”, in: Tsang, D.C.W., Ok, Y.S. (Eds.), *Biochar in Agriculture for Achieving Sustainable Development Goals*. Academic Press, pp. 345-359.