中英大学工程教育与研究联盟
University Consortium on Engineering Education and Research

ENGINEERING FOR CARBON ZERO 2022 —A GLOBAL PHD CONFERENCE (UCEER22-ECZ)

(**Virtual Conference**)

https://go.qub.ac.uk/UCEER22-ECZ

QUEEN'S UNIVERSITY BELFAST

天津大学 Tianjin University

Belfast, UK / Tianjin, China, 12-14 April 2022

ENGINEERING FOR CARBON ZERO 2022—A GLOBAL PHD CONFERENCE
Belfast, UK / Tianjin, China, 12-14 April 2022

PhD student, Xinzhu Pang

PhD student, Huadong Liao

Chair's Welcome

The UK-China Consortium of Engineering Education & Research (UCEER), in which Tianjin University and Queen's University Belfast are holding the first Global PhD Conference on 'Engineering for Carbon Zero' (UCEER22-ECZ) online.

Since the second industrial revolution, the extensive use of fossil energy has led to a sharp increase in CO_2 in the atmosphere. With the holding of the International Climate Conference and the recognition of this topic by the international community, reducing carbon emissions and controlling global warming has become an important topic in the 21st century. Many countries have pledged to achieve carbon neutrality, or carbon zero, by the middle of the 21st century to cope with the intensifying climate change. There are many research and technical

challenges that need to be solved urgently, including the use of sustainable energy, carbon capture, carbon utilization, carbon storage etc.

As the actual performer of scientific research, Ph.D. students will take up the important task of achieving zero carbon in the future. We look forward to calling on young researchers from the international community to contribute their talents and creativity through this conference. More importantly, we hope to provide a platform for all to exercise the academic expression and communication skills of young researchers by creating such an opportunity. We hope this conference will help everyone to establish contacts and cooperate with each other in the future.

We hope you enjoy the virtual conference and find it useful.

PhD student, Xinzhu Pang

PhD student, Huadong Liao

General Chair

Ms. Xinzhu Pang	Queen’s University Belfast, UK
Mr. Huadong Liao	Tianjin University , China

Programme Chair

Mr. Junhan Cheng	Queen’s University Belfast, UK
Ms. Zishan Han	Tianjin University , China

Organizing Committee Chair

Mr. Harrison Hampton	Queen’s University Belfast, UK
Mr. Shuzhuang Sun	Queen’s University Belfast, UK

Advisory Committee

Prof. Yan Jin	Queen’s University Belfast, UK
Ms. Melissa Laverty	Queen's University Belfast, UK
Mr. Guodong Wang	Tianjin University, China
Ms. Manling Wang	Tianjin University, China
Mr. Xuchu Liu	Tianjin University, China
Mr. Chao Yuan	Southeast University, Nanjing, China

Student representatives (Alphabet order)

Gang Zhao	Tongji University, China

Ikechukwu Ejim	The University of Nottingham, UK
Jie Zhu	Dalian University of Technology, China
Jinrao Gu	Southeast University, China
Marcus King	The University of Warwick, UK
Michail Theofilatos	The University of Liverpool, China
Pouya Kolahian	University College London, UK
Sihong Zhou	Harbin Institute of Technology, China
Siyuan Dai	The University of Birmingham, UK
Wei Tang	Beijing Institute of Technology, China
Xiyue Li	Chongqing University, China
Xun Jiang	The University of Cardiff, UK
Zemin Qin	Northwestern Polytechnical University, China

Scientific committee (Alphabet order)

Prof. Adam Clare	The University of Nottingham, UK
Prof. Alan Marshall	University of Liverpool, UK
Dr. Bing Liu	The University of Birmingham, UK
Ms. Cynthia Yu Wang	University of Liverpool, UK
Prof. David Rooney	Queen University Belfast, UK
Prof. Dongliang Zhong	Chongqing University, China
Dr. Gu Yifan	Tongji University, China
Prof. Hao Liu	The University of Nottingham, UK
Prof. Jianzhong Wu	The University to Cardiff, UK
Prof. Jihong Wang	The Univeristy of Warwick, UK
Prof. Kang Li	University of Leeds, UK

Prof. Kenneth Tong	University College London, UK
Dr. Maoshuai Li	Tianjin University, China
Dr. Meiyan Wang	Tianjin University, China
Prof. Sai Gu	The University of Warwick, UK
Prof. Sarah Spurgeon	University College London, UK
Dr. Shaoyun Chen	Dalian University of Technology, China
Prof. Sheng Zhang	Tianjin University, China
Dr. Tao Yu	Tianjin University, China
Prof. Tim Coombs	Durham University, UK
Dr. Wang Yanhong	South China University of Technology, China
Dr. Wei Chen	South China University of Technology, China
Prof. Wei Zhou	Harbin Institute of Technology, China
Prof. Yulong Ding	The University of Birmingham, UK

Conference Programme Overview

DAY	UK Time	China Time	Activity
DAY 1: 12 April	9:00am - 9:20am	4:00pm – 4:20pm	Welcome Address
	9:20am - 10:50am	4:30pm – 5:50pm	Keynote speeches
	10:50am - 11:35am	5:50pm – 6:35pm	Presentations
	11:35am - 12:30pm	6:35pm – 7:30pm	Break (China dinner time, 55 min)
	12:30pm - 2:30pm	7:30pm – 9:30pm	Presentations
DAY 2: 13 April	9:00am – 10:30am	4:00pm – 5:30pm	Keynote speeches
	10:30am – 11:30am	5:30pm – 6:30pm	Presentations
	11:30am – 12:30pm	6:30pm – 7:30pm	Break (China dinner time, 60 min)
	12:30pm – 2:00pm	7:30pm – 9:00pm	Presentations
DAY 3: 14 April	9:00am – 11:00am	4:00pm – 6:00pm	Presentations
	11:00am – 12:00pm	6:00pm – 7:00pm	Break (China dinner time, 60 min)
	12:00pm - 1:30pm	7:00pm – 7:30pm	Presentations
	1:30pm - 2:00pm	7:30pm – 9:00pm	Closing Ceremony

UCEER22-ECZ Detailed Programme

Day 1 (12th April)

UK Time: 9:00am - 9:20am China Time: 4:00pm - 4:20pm	**Welcome Address:** **(Host: Xinzhu Pang, Conference Chair, Queen's University Belfast)** ▪ **Professer Hu Wenping, Executive Vice President, Tianjin University** ▪ **Professor Margaret Topping, Pro Vice Chancellor for Internationalisation, Queen's University Belfast** ▪ **Cathy He, British Council**	
UK Time: 9.20am - 10:50am China Time: 4.20pm - 5:50pm	**Keynote speeches：** **(Host: Xinzhu Pang, Conference Chair, Queen's University Belfast)** ▪ **Professor Yulong Ding, University of Birmingham** ▪ **Professor Tim Coombs, Durham University** ▪ **Professor Tuo Wang, Tianjin University**	
	Capture and Conversion of Small molecule Carbon: **(Chairs: Shuzhuang Sun, Jie Zhu)**	**Green Chemical Engineering:** **(Chairs: Harrison Hampton, Ikechukwu Ejim)**
UK Time: 10:50am - 11:35am China Time: 5.50pm - 6:35pm	2. Single-atom Ni/α-MoC for Hydrogen Production from Partial Oxidation of Methane. (Zheyuan Ding) 20. Iron nanoparticles tuned to catalyze CO_2 electroreduction in acidic solutions through chemical microenvironment engineering. (Sheng Zhang ,Qun Fan and Xinbin Ma) 11. Controlled surface reconstruction of Cu metal favours CO_2 electroreduction. (Zishan Han, Zhe Weng and Quan-Hong Yang)	45. Research Status and Future Development of MABR Membrane Materials. (Wei Zhang) 42. Removal and Recovery of Aqueous Uranium Using Photocatalytic reduction method: Performance and Implication. (Zemin Qin and Yuheng Wang) 74. The effect of CO_2 on Ca hydrotalcite compound removing HCl in syngas at medium-high temperatures. (Songshan Cao, Jun Cao, Yangji Huang and Baosheng Jin)

UK Time: 11:35am - 12:30pm China Time: 6:35pm - 7:30pm	Break (55 min)	
	Capture and Conversion of Small molecule Carbon: **(Chairs: Shuzhuang Sun, Jie Zhu)**	**Green Chemical Engineering:** **(Chairs: Harrison Hampton, Ikechukwu Ejim)**
UK Time: 12:30pm – 2:30pm China Time: 7:30pm - 9:30pm	31. Efficient hydrogenation of CO_2-derived ethylene carbonate to methanol and ethylene glycol. (Youwei Yang, Yue Wang and Xinbin Ma) 33. Phase evolution of Fe species during Fischer-Tropsch synthesis: Effects of support property. (Han Xiaoxue, Huang Shouying and Ma Xinbin) 46. Synthesis of ordered mesoporous In_2O_3 and its catalytic performance for CO_2 hydrogenation to methanol. (Hao Wang, Jie Zhu, Guanghui Zhang and Xinwen Guo) 67. A Flexible unbalanced compensation scheme considering high feeder resistance for Cascaded H-bridge based Grid-forming converters. (Baoxian Li) 51. Dynamic structural evolution of iron catalysts during CO_2 hydrogenation to hydrocarbons. (Jie Zhu, Guanghui Zhang and Xinwen Guo) 60. Promoting CO_2 hydrogenation to light olefins using nitrogen-doped carbon supported Fe catalysts.	6. Application of crystallization technology in zero-carbon engineering: taking the methods of purifying fluorene and emulsion crystallization of crude anthracene from coal tar. (Huadong Liao，Qiuxiang Yin) 50. Interaction between quartz and kaolinite minerals in clay-rich tailings dewatering. (Zhiping Shi, Bin Ran and Liyan Liu) 53. The exploration and practice of zero carbon wastewater treatment plant. (Yaqi Yang and Xiaoning Zhang) 59. Investigating of PCDD/F discharge in a municipal solid waste incinerator. (Wei Tang) 73. Reaction Characteristics and Mechanism of CO Chemical Looping Combustion based on NiMn2O4 Composite Oxygen Carrier. (Ruixue Fang and Laihong Shen) 58. Application of MILD combustion for municipal solid waste thermal treatment. (Wei Tang and Yue Lou)

	(Zhou Yu, Jie Zhu and Xinwen Guo) 61. Magnetic Framework Composites for efficient CO_2 capture and release. (Luke Woodliffe) 23. Study on carbon dioxide corrosion protection of equipment based on double carbon background. (Yue Sun, Kun Zhang, Yanji Zhu, Chijia Wang and Huaiyuan Wang)	22. Aviation oil preparation and energy recovery from microwave pyrolysis performance of polystyrene. (Sichen Fan, Tao Liu and Yaning Zhang) 39. A Novel Size-Power Co-optimization Method for Battery to Grid System (Yunfei Bai, Jihong Wang and Wei He)

Day 2 (13th April)

UK Time: 9:00am - 10:30am China Time: 4:00pm - 5:30pm	**Keynote speeches:** **(Host: Shuzhuang Sun, Queen's University Belfast)** ▪ **Prof. David Rooney (Queens University Belfast)** ▪ **Dr. Fadhli Wong (Petronas, Malaysia)** ▪ **Prof. Bo Wang (Beijing Institute of Technology)**	
	Distribute energy system and energy management: **(Chairs: Huadong Liao, Pouya Kolahian, Xun Jiang)**	**Energy Storage and Electrochemistry:** **(Chairs: Zishan Han, Michail Theofilatos)**
UK Time: 10:30am-11:30am	37. Optimal Operation of Soft Open Points to Minimize Energy Curtailment of Distributed Generation in Electricity Distribution Networks. (Xun Jiang, Wenlong Ming, Yue Zhou and Jianzhong Wu)	12. In-situ Polymerization of Gel polymer Electrolyte with High Room-Temperature Ionic Conductivity and Optimized Solvation Structure for Sodium Metal Batteries. (Weichao Zhang)

China Time: 5.30pm - 6:30pm	7. Thermoelectric Conversion Efficiency of Thermophotovoltaic Cells at Different Blackbody Emitter's Temperature. (Xiuli Liu, Xue Chen, Chuang Sun and Xinlin Xia) 8. Real-time reconstruction of the time-dependent heat flux in graded index media by the unscented Kalman filter. (Pei Zhang, Chuang Sun and Fei Wang) 18. Heat Transfer Analysis of Hollow Block Ventilated Wall in Frigid Regions Based on CFD Modelling. (Rongkuan Zhu, Wentao Zhang, Qian Zhou and Yong Shuai)	21.Nonmetal ganju (S or Se)-bridged core shell electrodes for promoting electrochemical performance. (Jiawei Wang) 27. Molecular Engineering the Naphthalimide Compounds as High-Capacity Anolyte for Nonaqueous Redox Flow Batteries. (Tarelayefa Ingo, Louis Gyoh, Yong Sheng and Hamid Pouran)
UK Time: 11:30am-12:30pm China Time: 6:30pm - 7:30pm	Break (60 min)	
	Distribute energy system and energy management: **(Chairs: Huadong Liao, Pouya, Kolahian, Xun Jiang)**	**Energy Storage and Electrochemistry:** **(Chairs: Zishan Han, Michail Theofilatos)**
UK Time: 12:30pm -2:00pm China Time: 7:30pm - 9:00pm	24. MPC-based Local Voltage Control Strategy of DGs in Active Distribution Networks. (Jie Jian) 3. Solid Oxide Fuel Cell (SOFC) modelling, emulation, simulation and its multi-fuel behaviour based on a 700 W commercial stack. (Junhan Cheng, Ralph Lavery and Christopher McCallum) 43. Real Time Prediction based on Living Lab Platform.	30. Anthraquinone-Based Ionic Species as Stable Multi-Redox Anode Active Materials for Nonaqueous Redox Flow Battery. (Yi Li, Junhao Sun and Shengping Wang) 32. Order in Chaos：Effect of Boron Anomaly and V-Mo Coupling Multi-Electron Reactions on Lithiation Process of Amorphous Cathodes. (Fanhou Kong)

	(Jinq Liu and Jihong Wang) 49. Simulation of an SOFC trigeneration system comparing methane, hydrogen, and ammonia as potential fuel sources. (Ralph Lavery, Junhan Cheng, Christopher McCallum, Chunfei Wu and David Rooney) 64. Reliability evaluation of power distribution networks with the integration of electric vehicles and distributed generation. (Kaiqing Qiu) 16. Design of self-powered Al/GaAs hot electron detector for mid-infrared gas signal detection. (Sihong Zhou, Cheng Zhang, Qinghui Pan and Yong Shuai)	35. $MgCl_2 \cdot 6H_2O$-based composites for thermochemical energy storage. (Hongkun Ma, Boyang Zou, Jie Chen, Zhu Jiang and Yulong Ding) 44. Supply chain environmental impacts of lithium-ion batteries production and future emissions. (Jorge Llamas, Jon McKechnie and Fanran Meng) 47. Coal based carbon anodes for high performance alkali metal ion batteries. (Zhang Xiaoyu, Xiao Nan and Zu Guoqing) 71. Carbon-based monoliths with improved thermal and mechanical properties for methane storage. (Snezana Reljic)

Day 3 (14th April)

	Economic, Environmental and Social Aspects of Carbon Utilization: **(Chairs: Harrison Hampton, Sihong Zhou)**	**Bioenergy and Biotechnology:** **(Chairs: Huadong Liao, Zemin Qin)**
UK Time: 9:00am - 11:00am China Time: 4.00pm - 6:00pm	19. Regional Disparity and the Influencing Factors of Carbon Emissions in China at the county level based on Economic Growth, 2000-2017. (Yuanzhen Song and Sen Wang) 41. Research on the impact of big data on Public Governance. (Xing Fang) 68. Evaluation of Carbon Neutrality Benefits of Lushan County Based on Ecological Footprint and Carbon Footprint. (Na An and Haixing Meng) 52. Fuel permits management considering traffic emission cost. (Yaqi Yang and Xiaoning Zhang) 55. Modelling changes in the carbon stock affected by land use change: A case study of the Yangtze River Delta region. (Mian Wang) 54. Decarbonizing Ghana's road transportation sector: current knowledge and lessons from China and the United Kingdom.	5.High-performance energy harvesting from lukewarm photons based on black phosphorus (Zhou Cheng-Long, Yi Hong-Liang and Zhang Yong) 17. Investigation on deactivation and regeneration of bi-metallic Fe-Ni/ZSM-5 catalyst during biomass catalytic pyrolysis. (Yingkai Li, Dominic Yellezuome and Ronghou Liu) 66. Bioenergy and Syngas Generation in India Based on Agricultural Residues Estimation. (Tanmay Deka, Ahmed Osman, Debendra Baruah and David Rooney) 72. Developing smart sensing devices using cellulose derived from sustainable resources. (Zhenxing Wang, Junwen Pu and Dan Sun) 29. Cascade Hydrogenation of n-C16 to Produce Jet Fuel over Tandem Catalysts of Modified ZSM-22. (Yi Li, Junhao Sun and Shengping Wang 26. Low carbon resource treatment of food waste: a novel model based on the combination of composting and algae cultivation. (Chenxi Jin, Gang Zhao, Liyan Ma, Shiqiang Sun, Jia Chen,

	(Philip Kofi Alimo and George Lartey-Young) 62. Early-Stage Design for Zero Energy Rural Houses in Qinghai-Tibet Plateau: Methodology, Form and Impact Analysis. (Qiubo Xiao, Yu Liu and Yong He) 13. An analytical survey on the regional based energy storage requirement in China and UK at Net Zero era. (Qiumei Jing and Ben Bin Xu)	Dianhai Yang, Wenzhi He and Guangming Li) 63. Microbial-driven ectopic uranium reduction via a bioelectrochemical system. (Xin Tang, Fan Chen, Yin Ye and Yuheng Wang) 9. Integrated Metagenomic and Metaproteomic Analyses Unravel Ammonia Toxicity to Active Methanogens and Syntrophs, Enzyme Synthesis, and Key Enzymes in Anaerobic Digestion. (Chao Liu, Yinguang Chen, Xuemeng Zhang and Chuang Chen)
UK Time: 11:00am-12:00pm China Time: 6:00pm - 7:00pm	Break (60 min)	
	Economic, Environmental and Social Aspects of Carbon Utilization: **(Chairs: Harrison Hampton, Sihong Zhou)**	**Bioenergy and Biotechnology :** **(Chairs: Huadong Liao, Zemin Qin)**
UK Time: 12:00pm – 1:30pm China Time: 7:00pm - 8:30pm	28. Carbon Capture and Storage (CCS) as a Critical Technology for Meeting 'Net-Zero' emissions goals: Geological Assessment of a CO_2 storage site. (Tarelayefa Ingo, Louis Gyoh, Yong Sheng and Hamid Pouran) 56. Research Progress of International Zero-carbon Community Construction. (Bingqing Yu and Peng Zhang) 40. Multi-objective multi-depot green vehicle routing	15. Effect of particle morphology on radiative characteristics of embedded nanoparticles film. (Hongyu Pan, Xue Chen, Xin Wang and Xinlin Xia) 69. Investigating green hydrogen production from wind and the need for a baseload energy source. (Ashleigh Henry, David Rooney, Peter Robertson and Aoife Foley) 70. Influences of reduction soil disinfection on organic carbon within aggregates and bacterial community structure in the

	problem with time windows considering customer heterogeneity and time sensitivity. (Xiufeng Li) 25. Deep Reinforcement Learning for Carbon Zero Trajectory Planning in UAV Cargo System. (Liyan Ma, Chenxi Jin and Jingdong Zhao) 57. Research on Architectural Climate Analysis and Residential Reconstruction Design Strategy. (Bingqing Yu and Peng Zhang) 36. Comparative assessment of Artificial Neural Networks algorithms for the prediction of producer gas composition in air gasification of untreated biomass (Ikechukwu Ejim and Liu Hao)	degraded soil. (Yuhan Zhang, Yuheng Wang and Yanlong Chen) 65. Uranium-fluorite colloids can endure changes in redox conditions and microbial community structure. (Pei Ziru and Wang Yuheng) 14. Microdroplet-based in situ characterization of the dynamic evolution of amorphous calcium carbonate during microbially induced calcium carbonate precipitation. (Chunying Feng, Shufeng Zhao, Yiwu Zong, Qing He, William Winarto, Andrew S. Utada and Kun Zhao)
UK Time: 1:30pm-2:00pm China Time: 8:30pm-9:00pm	**Closing ceremony:** **(Host: Huadong Liao, Conference Chair, Tianjin University)** **Speeches:** • **Dr. Zhang Zhen, Director, Office of International Cooperation (Tianjin University)** • **Prof. David Rooney, Dean of Internationalization (Queens University Belfast)**	

Keynote Speakers (Sequence by the time of speeches)

1, Prof. Yulong Ding

Professor Yulong Ding is the founding Chamberlain Chair of Chemical Engineering and Director of University of Birmingham Centre for Energy Storage. He invented liquid air energy storage technology and led the initial stage of its developments and validation, which is commercialised by Highview Power. He developed composite phase change materials for thermal energy storage and associated large-scale manufacture technologies, leading to large scale commercial applications with a total installation of >300MW / >1.2GWh so far. His work on passively cooled container technology has been on large scale commercial demonstration for cold chain transportation applications.

He has published over 450 technical papers with ~350 in peer-reviewed journals (GS H Index of ~ 76) and filed 70+ patents. He currently serves on the Molten Salts Advisory Group of the UK Department for Business, Energy and Industrial Strategy; UK Royal Society Net Zero Panel; IChemE Publication Medal Assessment Panel; and European Technology, and Innovation Platform Working Group on Smart Networks for Energy Transition (ETIPSNET).

Professor Ding's work was recognised by the election to Fellow of Royal Academy of Engineering (2020); the award of IChemE Clean Energy Medal (2021); the IChemE Global Awards in three categories of Energy, Research Project and Outstanding Achievement Awards in 2019; the Distinguished Energy Storage Individual Award (Beijing International Energy Storage and Expo, 2018); the Cryogenic Energy Storage Research Chair Award (Royal Academy of Engineering, 2014); the Beijing Municipal

Science and Technology Progress Award (First Prize, Advanced Compressed Air Energy Storage System, 2014); and the Energy & Environment Award and Technology and Innovation Grand Prix Award (Liquid Air Energy Storage, 'The Engineer' Magazine, 2011).

2, Prof. Tim Coombs

Over the last 20 years, Prof. Tim Coombs lead EPEC (Electrical Power and Energy Conversion) superconductivity group, which has built up an outstanding international reputation in several areas of superconductivity research, ranging from novel theoretical tools for the understanding of superconducting properties up to real breakthroughs in the design of cutting-edge technologies. The group is now one of the strongest groups in the world with an extensive portfolio of experimental techniques and mathematical analysis tools.

Prof. Tim Coombs has strong links with industry and have had collaborative projects sponsored by BMW, Rolls Royce, Areva, EDF Energy, VA Tech, Applied Superconductor, etc. As well as UK universities, he has strong cooperation with other European (Liege, Jena and Barcelona) and American (Los Alamos, Argonne, Boeing) groups.

Prof. Tim Coombs has more than 210 papers published in high impact scientific journals. In addition to his university-based experience, he spent a further ten years in industry, and have authored more than ten patents.

3, Prof. Tuo Wang

Prof. Tuo Wang received his BS degree from Tianjin University and his PhD degree from the University of Texas at Austin, both in chemical engineering. After gaining another year of research experience as a postdoctoral associate, he joined Novellus Systems, Inc. (currently Lam Research Corp.) as a process development engineer for PECVD. He joined the faculty of the School of Chemical Engineering at Tianjin University in 2012. With vapor phase deposition of thin films as his main research interest, he has applied thin film materials in photoelectrochemical water splitting and CO2 reduction. He is the author of 105 papers such as Nature Energy, Nature Commun, AIChE J、JACS, Energy Environ Sci, and etc. He was granted with the NSFC Excellent Young Scholar Fund and won The State Natural Science Award (the Second Prize) and the Hou Te-Pang Chemical Engineering Youth Award, etc.

4, Prof. David Rooney

Professor David Rooney is the Dean of Internationalisation and Reputation for the Faculty of Engineering and Physical Sciences in Queens University of Belfast. His research focuses on energy generation and materials, and he is the Director of the Sustainable Energy Research Group at Queen's. David is also the director of the Bryden Centre, a €9.4 million cross-border, renewable energy research centre funded by the EU under the Interreg programme. At present, he works with oil and gas companies, regional industry, and government to advise on Zero Carbon technologies.

5, Dr. Fadhli Wong

Dr. Fadhli Wong is currently the General Manager heading the Fluid Technology Solutions department in PETRONAS with an international research team of 30 scientists at various PETRONAS global sites. Richly experienced in automotive engineering, Fadhli has championed the PETRONAS Motorsports including F1 and MotoGP for the past 20 years that has contributed not only to 8th times World Championship for the PETRONAS Mercedes AMG team but has also translated race technologies into downstream consumer products. With his extensive experience in oil and gas upstream operational excellence, he is now championing energy transitions in PETRONAS. Aside the demanding commitment in a corporate setting he is also a champion of PETRONAS Beyond Office Program to support employees' mental health and promotes diversity and inclusion in workplaces.

6. Prof. Bo Wang

Professor Bo Wang is the Vice President in Beijing Institution of Technology (BIT). Professor Wang is the National Distinguished Young Investigator, Executive Dean of the Advanced Research Institute of Multidisciplinary Science and Member of the Academic Committee of BIT. Professor Wang is also the executive director of the International IZA Society MOF, and the director of the International Academy of Electrochemical Energy.

Professor Wang has published ~80 papers on Nature, Science, JACS, Angew. Chem. Int. Ed., PNAS, Chem. Sci, J. Mater. Chem. A, Chem. Commun., and Sci. Rep. with a total citation of ~115000 times. Professor Wang is the winner of the Royal Society of Chemistry "Frontier Science and Technology Award (2008)" and the "Top Ten Frontier Technology Award" of American Wired Magazine (2008); Chinese Chemical Society Youth Chemistry Award (2015).