Preface to the CSCST-25 Special Issue¹⁾

Xiaolei Fan (✉)¹, Jiawei Wang (✉)²

¹ Department of Chemical Engineering and Analytical Science, School of Engineering, The University of Manchester, Oxford Road, Manchester, M13 9PL, UK

² European Bioenergy Research Institute, Aston University, Birmingham, B4 7ET, UK

© Higher Education Press and Springer-Verlag GmbH Germany, part of Springer Nature 2019

The Chinese Society of Chemical Science and Technology in the United Kingdom (CSCST) was established in 1994 in London by an elite group of Chinese chemists and chemical engineers in the UK with the main aim to promote interaction, network and collaboration among the Chinese academics, postdoctoral researchers and PhDs, but not limited to, in the United Kingdom (UK) higher education institutions and relevant industries. Since then, the CSCST community has continuously grown and further contributed to the various fields of Chemical Science, Engineering and Technology in the UK, as well as worldwide.

CSCST has the long tradition of organising the CSCST annual conference, which dates back to the first year of the establishment of the Society. The annual conference serves as a vibrant multidisciplinary platform for members to expand their personal and professional networks, to showcase their recent research innovations, to enable the exchange experiences and ideas, to develop links between fundamentals and industrial practice and applications, to develop their careers, and to flourish the Society.

The 25th edition (CSCST-25, 06th–07th September 2018) of the CSCST annual conference was hosted by The University of Manchester with the theme of Chemical Engineering, Materials Sciences, Energy and Surface Chemistry. CSCST-25 was attended by 100 + delegates with 30 + oral and/or poster presentations, which featured several plenary and keynote lectures by national and international eminent speakers (such as Prof. Martin Schröder, Vice-President and Dean of the Faculty of Science and Engineering, The University of Manchester).

Built on the success of CSCST-25, in collaboration with the *Frontiers of Chemical Science and Engineering*, we organised the Special Issue on CSCST-25 and invited the colleagues to submit manuscripts related to their conference presentations and research topics. All manuscripts were peer reviewed, and finally 15 contributions including 12 research articles, 1 communications and 2 review articles were accepted for publication in the Special Issue on CSCST-25 in *Frontiers of Chemical Science and Engineering*. The contributions covers a wide spectrum of research activities of the community including microwave-assisted process intensification [1–3], novel materials for carbon capture and energy applications [4–6], new materials for composites, catalysis and adsorption [7–10], biomass conversion technologies [1,11] and CFD and process simulation for improving the understanding of pore scale separation [12] and multipurpose batch processes [13]. The two review articles present the state-of-the-art of cold sintering processes for ceramic processing [14] and photothermal materials for solar-powered steam generation [15].

Based on the aesthetic appeal, one cover artwork and one back cover were selected by the editors. The cover story article details the engineering of polypyrrole hydrogels with a high energy storage capacity, which can be used as flexible yet strong supercapacitor electrodes for developing new wearable energy storage devices [4]. The back cover article presents the mechanistic study of microwave-assisted separation using a novel film evaporator, contributing to the development of energy-efficient separation technologies for challenging azeotropic systems [2].

Received September 10, 2019

E-mails: xiaolei.fan@manchester.ac.uk (Fan X), j.wang23@aston.ac.uk (Wang J)

1) Views expressed in this editorial are those of the authors and not necessarily the views of the FCSE. The authors declare no competing financial interests.

References

1. Jiang S, Daly H, Xiang H, Yan Y, Zhang H, Hardacre C, Fan X. Microwave-assisted catalyst-free hydrolysis of fibrous cellulose for deriving sugars and biochemical. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 718–726
2. Gao X, Shu D, Li X, Li H. Improved film evaporator for mechanistic understanding of microwave-induced separation process. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 759–771
3. Shang H, Ye P, Yue Y, Wang T, Zhang W, Omar S, Wang J. Experimental and theoretical study of microwave enhanced catalytic hydrodesulfurization of thiophene in a continuous-flow reactor. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 744–758
4. Chalmers E, Li Y, Liu X. Molecular tailoring to improve polypyrrole hydrogels' stiffness and electrochemical energy storage capacity. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 684–694
5. Suleiman B, Yu Q, Ding Y, Li Y. Fabrication of form stable NaCl-Al₂O₃ composite for thermal energy storage by cold sintering process. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 727–735
6. Rama S, Zhang Y, Tchuente-Magaia F, Ding Y, Li Y. Encapsulation of 2-amino-2-methyl-1-propanol with tetraethyl orthosilicate for CO₂ capture. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 672–683
7. Yan Y, Huang P, Zhang H. Preparation and characterization of novel carbon molecular sieve membrane/PSSF composite by pyrolysis method for toluene adsorption. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 772–783
8. Tsang C H A, Zhakeyev A, Leung D Y C, Xuan J. GO-modified flexible polymer nanocomposites fabricated via 3D stereolithography. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 736–743
9. Lu J, Lan L, Liu X T, Wang N, Fan X. Plasmonic Au nanoparticles supported on both sides of TiO₂ hollow spheres for maximising photocatalytic activity under visible light. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 665–671
10. Zhang H, Liang J, Xia B, Li Y, Du S. Ionic liquid modified Pt/C electrocatalysts for cathode application in proton exchange membrane fuel cells. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 695–701
11. Omar S, Alsamaq S, Yang Y, Wang J. Production of renewable fuels by blending bio-oil with alcohols and upgrading under supercritical conditions. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 702–717
12. Zhao J, Yao G, Wen D. Pore-scale simulation of water/oil displacement in a water-wet channel. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 803–814
13. Rakovitis N, Zhang N, Li J, Zhang L. A new approach for scheduling of multipurpose batch processes with unlimited intermediate storage policy. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 784–802
14. Yu T, Cheng J, Li L, Sun B, Bao X, Zhang H. Current understanding and applications of the cold sintering process. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 654–664
15. Liu F, Lai Y, Zhao B, Bradley R, Wu W. Photothermal materials for efficient solar powered steam generation. *Frontiers of Chemical Science and Engineering*, 2019, 13(4): 636–653

Jiawei Wang (left) is a Senior Lecturer in Chemical Engineering at the Aston University. Wang obtained his PhD in Chemistry from the University of Nottingham. Wang is the previous Chair of CSCST-UK, and currently the executive committee member of the Society. His main research interests are applying heterogeneous catalysis in energy and environment related areas.

Xiaolei Fan (right) is a Senior Lecturer in Chemical Engineering at The University of Manchester. Fan received his PhD in Chemical Engineering from the University of Bath in 2010. Fan is the current Chair of CSCST-UK, and his research broadly encompasses the heterogeneous catalysis, catalytic reaction engineering, process intensification and porous materials.

Wang and Fan are the invited Guest Editors of *Frontiers of Chemical Science and Engineering*.

Xuqing Liu is an independent Research Fellow (Principle Investigator) in Textile Bioengineering & Science at The University of Manchester. Liu obtained his PhD in Textile Chemistry from The Hong Kong Polytechnic University in 2015, and his general research interest is the Fibre Surface Molecular Engineering. He has published more than 50 research papers in high-quality journals, such as *Advanced Materials*, *Advanced Functional Materials*, *Small*, *NPG Asia Materials*, etc. He is current Chair of the Chinese Textile and Apparel Society in the UK.

Liu is the corresponding author of the cover story article (Evelyn Chalmers, Yi Li, Xuqing Liu*, 2019, 13(4): 684–694)

Hong Li received her PhD in Chemical Engineering from the Tianjin University (China) in 2007. She currently is a full Professor at the Tianjin University and National Engineering Research Centre of Distillation Technology, China. Li has published more than 100 peer-reviewed journal articles, and worked in more than 15 research projects as the Principal Investigator (PI)/Co-PI/Consultant. Her research focuses on mass transfer and separation engineering, process intensification, novel distillation technologies and microwave-assisted processes.

Li is the corresponding author of the back cover story article (Xin Gao, Dandan Shu, Xingang Li, Hong Li*, 2019, 13(4): 759–771)