Dr Haoyu Wang

Email: haoyu-wang@ucl.ac.uk *Phone: +44(0)774 621 0425*

RESEARCH INTEREST

My research interest is fluid dynamics. I have explored the application of intensified technology, such as microfluidic, in evaluating multiphase flow, complex fluid and formulation, in partnership with varies industries to bridge the gap between academic researches and industrial processes.

QUALIFICATION

2007 - 2015 **PhD in Mechanical Engineering**
Iowa State University (USA)
Thesis Title: Experimental and numerical study of Taylor-Couette flow

2004 - 2007 **MSc in Mechanical Engineering**
Tianjin University (China)

2000 - 2004 **BSc in Mechanical Engineering**
Tianjin University (China)

EMPLOYMENT

2020 – Co-I of EPSRC project (PREMIERE) and industrial funded project, £6.5M
Research Fellow, Department of Chemical Engineering, University College London

- Lead a research group to study the fluid dynamics and its application in different industrial processes, such as the application of microfluidics as a tool for the intensification and acceleration of chemical production.
- Head in intensifying the pharmaceutical process together with Prof Panagiota Angeli collaborating with Johnson Matthey.
- Supervised 1 PhD student and 1 MSc student, co-supervised 2 PhD students.

2017 – 2020 Co-I of industrial funded project (MicroSTAR), £1.5M
Research Associate, Department of Chemical Engineering, Imperial College London

- Developed the methodologies for the screening of formulated products using microfluidics in partnership with Procter & Gamble and BP.
- Co-supervised 2 PhD students (awarded postgraduate prizes) and 1 MSc student.

2017 – 2019 PI of subproject of MicroSTAR project, £10,000
Research Associate, Department of Chemical Engineering, Imperial College London

- Created a novel microfluidic platform for automated phase mapping of surfactant systems in partnership with Procter & Gamble and CPI.
- Co-supervised 1 PhD student and 1 MSc student.

2015 – 2017 Co-I of Horizon 2020 project (Intensified by Design), £1M
Research Associate, School of Engineering, Newcastle University

- Designed a platform for solid handling in the process intensification process in partnership with SMEs and industrial stakeholders.
- Co-supervised 1 PhD student.

2015 – 2017 PI of particle classification project, £2,000
Research Associate, School of Engineering, Newcastle University

- Chaired in the project for the design, fabrication and investigation of the Taylor-Couette reactor for solid handling.
- Supervised 1 MSc student.

2012 – 2015 PI of controlling alga growth in reactor, $1,500

Research Assistant/Associate, Ames Laboratory, U.S. Department of Energy National Laboratory, Iowa State University (USA)

- Planed the control of alga growth using a Taylor-Couette reactor.
- Co-supervised 1 MSc student.

2011 PI in the project of emission control in high horsepower engines, $20,000

Emission Engineer, Cummins Inc. (USA)

- Designed dilution-air temperature control system and Zero Air Generator quality test.
- Developed the tool for flow-weighted mean raw exhaust concentration calculation.

2007 – 2010 Co-I in the project of Iowa Growth project funded by State of Iowa, $90,000

Research Assistant, Department of Mechanical Engineering, Iowa State University (USA)

- Developed a novel flow meter in partnership with industrial stakeholders.

TEACHING EXPERIENCE

2018 - 2019	Teaching Assistant	Imperial College London
2016 - 2017	Teaching Assistant	Newcastle University
2012 - 2015	Instructor	Iowa State University (USA)

AWARDS

(Total amount awarded: ~£2000)

2013	Teaching Excellence Award	Iowa State University (USA)
2007	Research Reward	Tianjin University (China)
2004 - 2007	National fellowship	Tianjin University (China)

PROFESSIONAL ACTIVITIES/MEMBERSHIPS

Peer reviewer for scientific publications

- AIChE Journal
- Journal of Thermal Science and Engineering Progress
- Journal of Chinese Journal of Chemical Engineering
- Journal of Hazardous Materials
- Journal of Chemical Engineering & Technology
- Chinese Journal of Mechanical Engineering

Membership

- American Physical Society (APS) Membership
- Institute of Physics (IOP) Membership

PUBLICATIONS

JOURNAL ARTICLES

12. **Haoyu Wang**, Sepideh Khodaparast, John Carroll, Eric Robles, João T. Cabral, “A microfluidic platform for rapid phase mapping with a multiwell plate”, Rev. Sci. Instrum. 91, 045109, 2020
11. Yiran Jiao, **Haoyu Wang**, Chen Ling, Jie-Xin Wang, Joshua Saczek, Sreepathy Sridhar, Ben Bin Xu, Steven Wang, and Dan Wang, "Controllable Synthesis of Upconversion Nanophosphors towards Scale-up Productions", Part. Part. Syst. Charact. 2000129, 2020
10. **Haoyu Wang**, Gunjan Tyagi, João T. Cabral, “Microfluidic cycling approach for measurement of thermal asymmetry of phase change in formulations”, Meas. Sci. Technol. 2020 (submitted)

9. **Haoyu Wang**, R. Dennis Vigil, Michael G. Olsen, "Validation of Unsteady k-omega Model Simulations of Turbulent Taylor-Couette Flow with High-Speed Stereoscopic Particle Image Velocimetry", Int. J Heat Fluid Fl., 2020 (in revision)
8. Yutaka Aoki, William Sharratt, **Haoyu Wang**, Roisin O'Connell, Luca Pellegrino, Sarah Rogers, Robert M. Dalgliesh, Julia S. Higgins, and João T. Cabral, "Effect of Tacticity on the Phase Behaviour and Demixing of PαMSAN/dPMMA Blends Investigated by SANS", Macromolecules, 53 (1), 445-457 2020
7. Yutaka Aoki, **Haoyu Wang**, William Sharratt, Robert M. Dalgliesh, Julia S. Higgins, João T. Cabral, "Small Angle Neutron Scattering study of the thermodynamics of highly interacting PαMSAN/dPMMA blends", Macromolecules, 52 (3), 1112–1124 2019
6. Sepideh Khodaparast, **Haoyu Wang**, William Sharratt, Eric S. J. Robles, João T. Cabral, "Spontaneous formation of multilamellar vesicles from aqueous micellar solutions of NaLAS", Colloid and Interface Science, 546, pp 221-230 2019
5. **Haoyu Wang**, Ahmad Mustaffar, Vladimir Zivkovic, David Reay, Kamelia Boodhoo, "A review of process intensification applied to solids handling", Chem. Eng. Process, 118, 78-107. 2017
4. **Haoyu Wang**, Huiming Zhang, Defu Zhang, Yulong Deng, "Experimental Investigation on Operation Characteristics of the Compression Ignition CNG Engine," Transactions of the Chinese Society for Agricultural Engineering, 38(11):31-35 2007
3. Defu Zhang, **Haoyu Wang**, Huiming Zhang, Qingping Zheng, Yulong Deng, "Experimental Study on Compression Ignition Engine with Natural Gas Compound Supply", Journal of Combustion Science and Technology, 13(4):304-308 2007
2. Defu Zhang, **Haoyu Wang**, Huiming Zhang, Yulong Deng, "Design and experimental research on natural gas motor with low heat radiation and ignition of compressive combustion," Journal of Machine Design, 23(1):36-38 2006
1. Yulong Deng, **Haoyu Wang**, Huiming Zhang, Defu Zhang, "Study on Compress Ignition Process of CNG Engine," Journal of Vehicle Engine, (1):15-18 2006

ARTICLES IN CONFERENCE PROCEEDINGS

7. **Haoyu Wang**, Sepideh Khodaparast, João T. Cabral, "Study of phase behavior and (meta)stability of model surfactant solutions by microfluidic thermal fluctuation platform", APS March Meeting 2019, Boston, US
6. Yutaka Aoki, **Haoyu Wang**, William Sharratt, Sarah Rogers, Robert Dalgliesh, Julia Higgins, João T. Cabral, "SANS study of the thermodynamics and demixing of highly interacting PaMSAN/dPMMA blends", APS March Meeting 2019, Boston, USA
5. **Haoyu Wang**, Anh Phan, Vladimir Zivkovic, Kamelia Boodhoo, "Study of Residence Time Distribution in a Taylor-Couette Reactor", AIChE Annual Meeting 2017, Minneapolis, USA
4. **Haoyu Wang**, Anh Phan, Vladimir Zivkovic, Kamelia Boodhoo, "Particle classification via Taylor-Couette flow: Experimental and Simulation Studies," 10th World Congress of Chemical Engineering 2017, Barcelona, Spain
3. Defu Zhang, **Haoyu Wang**, Huiming Zhang, Zhiqiang Zhu, "Study of new combustion systems for electronically controlled injection CNG engine", Automotive Powertrain Conference Joint Meeting 2007, Tianjin, China
2. **Haoyu Wang**, Huiming Zhang, Defu Zhang, Yulong Deng, "Experimental Investigation on Compression Ignition CNG Engine," China Internal Combustion Engine Industry Association Conference 2006, Tianjin, China
1. **Haoyu Wang**, Defu Zhang, Huiming Zhang, Qingping Zheng, "Experimental Investigation on Combustion Characteristics of the Pre-Mixed Compression Ignition CNG Engine," China Automotive Powertrain Conference Joint Meeting 2005, Wuhan, China