POLYTECHNIQUE MONTRÉAL
LE GÉNIE EN PREMIÈRE CLASSE

Shuli Shu, PhD

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Education

- **Institute of Process Engineering, Chinese Academy of Sciences, Beijing, CN** (2016)

Ph.D. Degree, EMMS group, State Key Laboratory of Multiphase Complex Systems
Thesis: "Multiscale Modeling of Complex Flows in Bubble Column Reactors Based on Lattice Boltzmann Method"

- **Huazhong University of Science and Technology, Wuhan, CN** (2010)

B.Sc. Degree, School of Chemistry and Chemical Engineering
Thesis: "CFD Simulation of Single Phase Flow in a Stirred Tank"

Research Interests

- Computational Multiphase Fluid Dynamics
- Chemical Reaction Engineering
- Scale-up and Optimization
- Artificial Intelligence
- High Performance Computing
- GPU acceleration

Work Experience

- **Process Engineering Advanced Research Lab (PERAL)**, Postdoc 2016.09-
  Polytechnique Montreal, Montreal, QC, Canada

Expertise

- Computational Fluid Dynamics of Multiphase Flow
- Reactor design, scale up and optimize
- C/C++/ CUDA/MPI programing and optimization
- OpenFOAM/ANSYS Fluent/ACUSIM/LIGGGHTS

Research Background

- Numerical Simulation of Multiphase Flow in Chemical Reactors.
- Large Scale Simulation of Crude Oil Mixing in An Industrial-scale Oil Storage Tank (BP Project)
- Population Balance Modelling of Aerated Equipment in Ice-cream Manufacturing (Unilever Project)
- Process Intensification in Emulsification With the Aid of CFD (BASF Project)
- Compartment Modelling of High Pressure and High Temperature Bubble Column Reactor (TOTAL Project)
- Experiments on High Pressure and High Temperature Bubble Column Reactor (TOTAL Project)
- Optimization of Photobioreactor with Eulerian – Eulerian – Lagrangian Model (Syctom Project)

Journal Publications

- Shu, S. L., Vidal, D., Xiong, Q. G., Bertrand, F., Chaouki, J. Multiscale Multiphase Phenomena in Bubble Column Reactor: A Comprehensive Review Submitted to Particuology (Invited paper).
- Shu, S., Yang, N. LBM simulation of gas-liquid flow in a rectangular bubble column. In progress.
- Xiong, Q. G., Xu, F., Pan, Y. Y., Yang, Y., Gao, Z. M., Shu, S. L., Hong, K. Bertrand, F., Chaouki, J. (2018). Chemical Engineering and Processing - Process Intensification, 127, 206-212. https://doi.org/10.1016/j.cep.2018.04.005
- Shu, S. L., & Yang, N. (2018). GPU-accelerated large eddy simulation of stirred tanks. Chemical Engineering Science, 181, 132-145. https://doi.org/10.1016/j.ces.2018.02.011
- Shu, S. L., & Yang, N. (2018). Numerical study and acceleration of LBM-RANS simulation of turbulent flow. Chinese Journal of Chemical Engineering, 26(1), 31-42. doi:10.1016/j.cjche.2017.05.013
- Wu, H. S., Shu, S. L., Yang, N., Lian, G. P., Zhu, S. P., & Liu, M. Y. (2014). Modeling of power characteristics for multistage rotor-stator mixers of shear-thinning fluids. Chemical Engineering Science, 117, 173-182. https://doi.org/10.1016/j.ces.2014.06.039
- Wu H, Shu S., Yang N, Liu M. (2014). Computers and Applied Chemistry. 31(8):897-901.
- Shu, S. L., & Yang, N. (2013). Direct Numerical Simulation of Bubble Dynamics Using Phase-Field Model and Lattice Boltzmann Method. Ind. Eng. Chem. Res, 52(33), 11391-11403. https://doi.org/10.1021/Ie303486y

Conference Publications

- Shu, S. L., Lakhdissi, E.M., Bertrand, F., Chaouki, J. Hydrodynamics of Slurry Bubble Column Reactor: CFD Modeling and Experimental Validation. Mathias 2017, Paris, France, Oct 2017.
- Shu, S. L., Demol, R., Bertrand, F., Tanguy, P., Chaouki, J., Compartment Modelling of Bubble Column Reactors Based On Computation Fluid Dynamics. FORMULA XI, Beijing, Oct. 2017.
- Shu, S. L., Yang N. Multiscale simulation of bubble column based on Lattice Boltzmann Method. Poster, 1st International workshop on Computational Particle Technology and Multiphase Processes Engineering, Suzhou, March 9-12, 2016.
- Shu, S. L., Yang N. Direct Numerical Simulation of Bubble Dynamics Using Phase-Field Model and Lattice Boltzmann Method. Poster, 4th International Conference on Multiscale Structures and Systems in Process Engineering, Beijing, Sep 26-28, 2012.

Other Academic activities

Guest Editor of Chemical Engineering & Technology, C – Journal of Carbon Research; ***Invited reviewer*** of Chemical Engineering Science, Fuel, Powder Technology, Canadian Journal of Chemical Engineering, Chemical Engineering and Processing, Environmental Progress & Sustainable Energy, International Journal of Hydrogen, Advances in Mechanical Engineering.

Patents and Software Copyrights

- Shu, S., Yang N. FastCFD for industrial mixing process. Software Copyright.
- Shu, S., Yang N. A method for quasi-real-time CFD simulation. CN Patent: 201510272453.4