Dening Eric Jia
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EDUCATION

Ph.D. in Chemical and Biological Engineering Jan. 2013 – Mar. 2017

University of British Columbia, Vancouver, Canada

Thesis: Heat and mass transfer of biomass in fluidized beds for biofuel productions

Supervisory Committee: John R. Grace, Xiaotao Bi, C. Jim Lim and Patrick Kirchen

M.Sc. in Chemical Engineering and Technology Sept. 2009 – Jul. 2012

China University of Petroleum, Qingdao, China

Thesis: Numerical study of the counter-current gas-solid flow in FCC stripping section

B.Sc. in Chemical Engineering and Technology Sept. 2005 – Jul. 2009

China University of Petroleum, Qingdao, China

Overall GPA 4.0/4.0s

PUBLICATIONS

BOOK CHAPTERS

1. D. Jia, Chapter 15. "Heat and Mass Transfer", in: J.R. Grace, X. Bi, N. Ellis (Eds.) *Essentials of Fluidization Technology*, John Wiley & Sons, 2017. *(In Press)*

JOURNAL PAPERS

2. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, "Heat transfer in a tapered fluidized bed of biomass particles with pulsed gas flow", *Particuology*, (2018).

3. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, "Heat Transfer in a Pulsed Fluidized Bed of Biomass Particles", *Industrial & Engineering Chemistry Research*, 56 (2017) 3740-3756.

4. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, "Gas-solid mixing and mass transfer in a tapered fluidized bed of biomass with pulsed gas flow", *Powder Technology*, 316 (2017) 373-387.

5. D. Jia, X. Bi, C. Lim, and A. Tsutsumi, "Biomass Drying in a Pulsed Fluidized Bed without Bed Particles". *Fuel*.186 (2016) 270-284.

6. D. Jia, J. Peng, X. Bi, C. Lim, Y. Liu and A. Tsutsumi, "Fluidization and drying of biomass particles in a vibrating fluidized bed with pulsed gas flow". *Fuel Processing Technology*. 138 (2015) 471-482.

7. J. Peng, X.T. Bi, C.J. Lim, H. Peng, C.S. Kim, **D. Jia**, H. Zuo, "Sawdust as an effective binder for making torrefied pellets", *Applied Energy*, 157 (2015) 491-498.

8. J. Peng, J. Wang, X.T. Bi, C.J. Lim, S. Sokhansanj, H. Peng and **D. Jia**, "Effects of thermal treatment on energy density and hardness of torrefied wood pellets", *Fuel Process. Technol.*, 129 (2015) 168-173.

9. D. Jia, H. Zhao, AS. Berrouk, C. Yang and H. Shan. "Numerical study of counter-current gas-solid flow in FCC disengager and stripper", *The Canadian Journal of Chemical Engineering*. 2014, 92(1):176-188.

CONFERENCE PROCEEDINGS

10. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, "Mass transfer in a tapered fluidized bed of biomass with pulsed gas flow", in: J. Chaouki, F. Berruti, X. Bi, R. Cocco (Eds.) *Fluidization XV*, ECI Symposium Series, Montebello Quebec, Canada, 2016.

11. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, "Fluidization and Drying of Biomass Particles in a Vibrating Fluidized Bed with Pulsed Gas Flow", in: X. Bi (Ed.) *5th International Conference on Biorefinery*. Vancouver, British Columbia, Canada, 2015.

TECHNICAL REPORTS

12. D. Jia, J. Grace, C.J. Lim and X. Bi, "Brief Report on Final Commissioning of 2-D Fluidized Bed Column for Zinc Roasters at Teck Trail Operations". *Final report to GLAB Reactor and Fluidization Technologies*. 2017.

13. D. Jia, X Bi, "Design options for the microwave-assisted fluidized bed pyrolysis of biomass, source of fluidization medium and energy", *Preliminary report to the Canadian Foundation for Innovation and UBC Intellectual Property Office*, 2018.

SELECT CONFERENCE PRESENTATIONS

1. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, Heat transfer of biomass particles in a tapered fluidized bed with pulsed gas flow, in: M. Olazar, C.J. Lim, W. Zhong, M.A.S. Barrozo (Eds.) *7th International Symposium on Spouted Beds*. Barcelona, Spain, 2017.

2. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, Heat transfer in a pulsed fluidized bed of biomass, in: H. Jin, Y.-H. Lee (Eds.) *Asia-Pacific Forum on Renewable Energy*. Guangzhou, China, 2016.

3. D. Jia, X. Bi, C.J. Lim, S. Sokhansanj, A. Tsutsumi, Gas-solid mixing and mass transfer in a tapered fluidized bed of biomass with pulsed gas flow. *Fluidization XV*. Montebello Quebec, Canada, 2016.

4. D. Jia, H Zhao, C. Yang and H. Shan. "Numerical Simulation of the Counter-Current Gas-Solid Flow in FCC Stripping Section", *Canadian Chemical Engineering Conference*. London, Canada, 2011.

RESEARCH EXPERIENCE

Postdoctoral Research Fellow Apr. 2017 – Present

University of British Columbia, Vancouver, Canada

- Designed a fluidized bed reactor for biomass pyrolysis, as well as downstream apparatuses for bio-oil/bio-char production and upgrading;
- Performed essential calculations and cost-effectively sourced key components (e.g. feeder, combustor and heat exchangers) from various vendors in compliance with design specifications and UBC/WorkSafeBC/FortisBC safety codes;
- Ensured timely progress of the project and clear communications between all parties, led a team of graduate students towards their research objectives.

Technical consultant Oct. 2016 – Present

Teck Trail Operations, Trail, BC, Canada

- Contracted by Teck for the design, commission and operation of a high-frequency data logging system intended for the fluidized bed ore upgrader;
- Integrated the highspeed signal processing module to existing DCS to detect operational abnormalities and issue early warnings;
- Documented findings into technical reports and wrote work procedures for the operators.
- Coordinated with onsite engineers of other discipline and project support staff.

Visiting Scholar March – May 2016

University of Tokyo, Japan

- Furthered collaborations between University of Tokyo and UBC around the mutual interest of sustainable engineering, energy conservation and optimization in biomass thermal conversion processes;
- Facilitated publication of 7 papers and dispatch of two additional academic exchanges.

Student Intern Sep. 2013 – Apr 2016

Highbury Energy, Vancouver, BC

- Assisted in the operation and maintenance of a commercial-scale dual-bed biomass gasifier for syngas production, familiarized with common analytical methods for biomass thermal conversion including ultimate and proximate analysis, GC and TGA operations;
- Programmed a monitoring, online analysis and control system in LabVIEW, incorporated multiple capacitance probes, over 40 thermocouples and pressure transducers.

TEACHING EXPERIENCE

Lab Instructor, LabVIEW Workshop Jul. 2014 – Dec. 2016

University of British Columbia, Vancouver, Canada

- Designed a new workshop as part of the Process and Environmental Engineering Laboratory course (CHBE 362, average class size: 90);
- Drafted lab manuals for the workshop, designed procedures for each experiment, prelab assignments, lab report format and evaluation standard;
- Directly interacted with students during and after the lab, including presentations and demonstrations, as well as after-hour consultations;
- Introduced the concept of process control and LabVIEW software to over 200 students, who learned about data acquisition and data processing through hands-on experiments;
- Accurately marked and graded assignment work and examinations.

Teaching Assistant, 2nd Year Laboratory Sept. 2013 – Dec. 2013

University of British Columbia

- Supervised students during the Chemical Engineering and Applied Chemistry Laboratory course (CHBE 262);
- Introduced various chemical engineering operations to undergraduate students such as fluidized bed, heat exchanger and azeotropic distillation;
- Worked with lab instructor to ensure active participation and safety of students;
- Graded weekly lab reports while ensuring assignments were technically appropriate.

Teaching Assistant, CH E 314 Heat Transfer Sept. 2012 – Dec. 2012

University of Alberta, Edmonton, Canada

- Delivered a range of modules during the course of semester on behalf of the professor.
- Updated problems in the assignments that better reflected the current teaching goal.
- Graded all assignments and exam papers, offered consultation to students.

PROFESSIONAL EXPERIENCE

Graduate Assistant Sept. 2016 – Jan. 2017

UBC APSC Sustainability Pathway Initiative, Vancouver, Canada

- Assisted in the development of the Applied Science Sustainability Pathway Engagement Initiative to develop strategies on the engagement and consultation towards a sustainability pathway in the faculty;
- Identified sustainability-oriented courses in the Faculty of Applied Science and experiences that students could pursue alongside their disciplinary major, drafted strategy proposals for implementing undergraduate curriculum changes.

Conference Coordinator Aug. 9 – Aug. 12, 2015

The Fifth International Conference on Biorefinery, Vancouver, Canada

- Created and maintained a professional web presence for the conference including an online payment system, generated more than 10,000 site visits;
- Streamlined the abstract screening and reviewing process by creating an online abstract database system, efficiently processed over 300 abstracts;
- Prepared conference programme book and prospectus for attendees and sponsors.

ADDITONAL EXPERIENCE

Technical Translator Dec. 2014 – Present

Knowtions.com, Toronto, Canada

- Contributed to the conception of Knowtions.com, a professional translation initiative (now acquired by Google and contracted by Elsevier for textbook/journal translations).
- Translated and edited 100+ English-Chinese and Chinese-English technical literatures with very high customer satisfaction.

Volunteer Nov. 2014 – Present

FreeGeek, Vancouver, BC, Canada

- Held workshops teaching entry-level users and seniors computer problems.
- Contributed to the recycling and repurposing of old computer hardware by re-installing Windows/Linux, disassembling and sorting out parts containing precious metals.

RESEARCH INTEREST

- Fluidization of cohesive and irregular particulate material
- Thermal conversion and pre-treatment of biomass, including dying, torrefaction, pyrolysis and gasification
- Multiphase reactor design and reaction engineering
- Process design and optimization through process simulation (Aspen Plus, DWSIM)
- Process control and instrumentation through NI LabVIEW
- Computational fluid dynamics (CFD) study of multiphase flow (COMSOL, FLUENT)
- Heat and mass transfer in multiphase systems.

FELLOWSHIP AND AWARDS

GLS-6 Chemical and Biological Engineering Award Aug. 2017

Awarded for the graduate student who makes the most outstanding seminar presentation in the Department of Chemical and Biological Engineering's annual seminar series.

UBC Go Global Award Jun. 2016

Awarded to full-time UBC students accepted into a research abroad program through Go Global.

Kashmir Singh Manhas Scholarship in Applied Science Jul. 2015

Engineering scholarships awarded for higher education students in British Columbia with research excellence.

John R. Grace Graduate Scholarship in Chemical Engineering Sept. 2014

Awarded to graduate students in chemical and biological engineering who demonstrate academic excellence and potential for service to society by performing research on energy, environment and multi-phase systems.

Faculty of Applied Science Graduate Award Jan.2013, Mar 2014

Merit-based scholarship awarded to graduate students in the discipline of applied science in the University of British Columbia.

First Class Fellowship for Graduate Students 2009, 2010 and 2011

Awarded to graduate students at China University of Petroleum (East China) with high academic achievements.

PROFESSIONAL AFFILIATIONS

Engineer in Training (E.I.T) Jul. 2017 – Present

Association of Professional Engineers and Geoscientists of British Columbia, Canada

Member Aug. 2015 – Present

American Institute of Chemical Engineers (AIChE)

Member Oct. 2014 – Present

Canadian Society of Chemical Engineering (CSChE)

TECHNICAL PROGRAMS AND PROFICIENCIES

Process simulation: Capable with Aspen Plus, Aspen Exchanger Design and Ratings, DWSIM

Process instrumentation: Proficient in NI LabVIEW and legacy systems such as Labtech Notebook

Data analysis: Proficient in OriginPro, DiaDem and Excel.

Multimedia: Proficient in Adobe Photoshop, Adobe Photoshop Lightroom, VegasPro and Audacity.

CAD: Proficient in AutoCAD, AutoCAD Inventor Professional, familiar with SOLIDWORKS.