Samira Lotfi, Ph.D.
Chemical Process & Environment Scientist
+1-438-888-7891
samira.lotfi@gmail.com

INTRODUCTION

Samira is an independent and creative thinking researcher that has passion for developing and improving chemical process and reactions, fuels, materials and renewable products, managing projects and leading people - and enjoys challenging herself and learning new skills.

OBJECTIVE

She has deep experience in the following field:

- Basic, applied and experimental knowledge on chemical process design, kinetic modeling and operate the reactor and develop and optimize the reactions and simulate the process.
- Managing and collaborating in several projects on conversion of biomass to energy and chemicals and production of syngas.
- Synthesis, develop, test and detailed characterization of catalysts for high performance in different process methods.
- Experience with process laboratory supervision, managing and motivating people, maintaining instruments, planning and scheduling projects, and addressing safety issues.
- Practical experiments on running analysis instruments include GC, MS, HPLC and characterization instruments such as TGA, PSD, XRD, STM-EDS, FT-IR, Optical microscope, BET

EDUCATION

- 2011-2015, École Polytechnique de Montréal, QC, CANADA,
  Ph.D. Chemical Engineering. 'Conversion of lignin and black liquor to aromatics and carboxylic acid'
- 2007-2009, Material and Energy Research Center, Tehran, IR,
  M.Sc., Renewable Energy Engineering. 'Production of biodiesel from micro-algae'
- 2002-2006,FerdowsiUniversity of Mashhad, Mashhad, IR,
  B.Sc., Chemical Engineering, Gas industry, 'Transient and spatial modeling and simulation of poly-brominateddiphenyl-ether reaction and transport in air, water and soil'

WORK EXPERIENCE

- **Research associate**

National research Council Canada (Canada), 2016-present.

  - ✓ Designing, developing and test chemical process to remove contaminants from water
  - ✓ Modeling and analysis of wastewater treatment systems
  - ✓ Modeling and analysis of biological water treatment processes
  - ✓ Project management
  - ✓ Design and develop tar removal hybrid system include heat exchange , wet packed-bed scrubber and packed-bed filter

- **Unit Operations Laboratory Supervisor**

École Polytechnique de Montréal (Canada), 2011-2014.

  - ✓ Plan, manage and supervise the activities of the lab
  - ✓ Train and supervise lab staff and enforce safety procedures
  - ✓ Consult with and motivate lab staff
  - ✓ Supervise purchasing of supplies and maintain equipment inventory
  - ✓ Knowledge on laboratory facilities, methods, equipment, materials, and equipment maintenance

- **Conversion of lignin and black liquor to aromatics and carboxylic acid**

École Polytechnique de Montréal (Canada), 2011-present.

  - ✓ Designing and developing Gas-solid and Gas-Solid-Liquid process in the fluidized-bed reactor for conversion of lignin to chemicals.
  - ✓ Analysis, quantifying and qualifying, gas, solid and liquid by MS, TGA, GC-MS, HPLC, etc. in order to evaluate the process performance and calculate the mass balance.

- ✓ Synthesis various kinds of heterogeneous catalysts, test, develop and characterize precisely by using various techniques i.e., BET, PSD, XRD, STM-EDS, Optical microscope.
- ✓ Investigate the effect of liquid composition, gas and liquid flow rates and injector size on liquid injection properties and process performance in three phase fluidized-bed reactor.
- ✓ Develop kinetic models to optimize and scale-up the process.
- ✓ Supervision of five junior researchers and two senior researchers, collaboration with academia (University of Ottawa, McMaster University) and industry (FPInnovations).

- **Production of biodiesel from micro-algae**

Material and Energy Academic Research Center, Iran, 2007-2009.

- ✓ Extracting the micro-algae's oil by Soxhelet extractor.
- ✓ Synthesis enzymatic catalyst and evaluate its performance in conversion of micro-algae oil and waste oil into bio-diesel.

- **Transient and spatial modeling and simulation of poly-brominateddiphenyl-ether reaction and transport in air, water and soil**

Ferdowsi University of Mashhad, Iran, 2005-2006.

- ✓ Modelling and simulation of pollution behavior by finite difference and lines method.

- **Arak Petrochemical Company**

Arak, Iran, June2005 -August.2005.

- ✓ A comprehensive study on boiler, packed bed reactors, towers and P&ID.

EXPERIMENTS ACADEMIC

- **Teaching Assistant,** Catalysis and applied kinetics
  École Polytechnique de Montréal (Canada), 2015.
  - ✓ solely responsible for the laboratory course
  - ✓ Manage eight senior students
  - ✓ Exams preparation and student evaluation
- **Project Management**
  École Polytechnique de Montréal (Canada), 2012-2015.
  - ✓ Partial oxidation of methane to syngas.
  - ✓ Hydrogenation of lignin model compounds to aromatic.
- **Project Collaboration**
  École Polytechnique de Montréal (Canada), 2012-present.
  - ✓ Gas phase oxidation of 2-methyl 1,3 propanediol tomethacrylic acid over heteropolyacid catalysts

AWARDS

- Best presentation reward during McGill-PolytechniqueResearch Day, 2015.
- 1st prize of Dragons' Den competition- 3rd FIBRE network conference, 2015.
- Acceptance in oil and gas petrochemical company employment exam, Ahvaz, Iran, 2006.

COMPUTER SKILLS

- MS Office, Latex
- Simulation: MATLAB, HYSYS, Aspen
- Modeling & Statistics: Sigma Plot, Minitab

LANGUAGE

- English, French, Farsi

PROFESSIONAL MEMBERSHIP

- Member of Lignoworks network, Canada
- Member of FIBRE network, Canada
- Member of PAPTAC, Canada
- Member of CSChE, Canada
- Member of Crepeq, Canada
- Member of Iranian chemical engineering order, Iran

COMMUNITY &VOLUNTEER ACTIVITIES

- Educational and financial support of three high school students
- Co-organizer of eighth chemical engineering conference, Mashhad, Iran, 2002.
- Co-organizer of first FIBRE meeting, Canada, 2012, 2014.

HOBBIES

- Painting, Reading, Sports (Swimming, hiking, Workout).

REFERENCES

- Reference is available upon requests.

CONTRIBUTIONS

Published papers

- **S. Lotfi,** Daria C. Boffito, Gregory S. Patience, Gas-solid conversion of lignin to carboxylic acids, *React. Chem. Eng., 2016, **1**, 397-408.*
- **S. Lotfi,** Daria C. Boffito, Gregory S. Patience, Partial oxidation of lignin to carboxylic acids over vanadium pyrophosphate and Al-V-Mo in a three phase reactor, *ChemSusChem, 2015, 8, 3424-3432.*
- Z. Ma, P. Ouzilleau, C. Trevisanut, C. Neagoe, **S. Lotfi**, D. C. Boffito, G. S.Patience , Partial oxidation of methane to syngas over Pt/Rh/MgO catalyst supported on fecralloy woven fibre, *The Canadian journal of chemical engineering, DOI: 10.1002/cjce.22428.*
- M. J. Darabi Mahboub, S. Lotfi, J.L Dubois,z and G. S. Patience, Gas phase oxidation of 2-methyl 1,3 propanediol to methacrylic acid over heteropolyacid catalysts, *Catal. Sci. Technol., 2016, 6, 6525-6535.*
- **S.Lotfi**, Gregory S. Patience, Kinetic study of lignin thermal and thermo-oxidative degradation (submitted- 2017).
- **S.Lotfi**, Gregory S. Patience, Kinetics modelling the oxidation of the lignin over TiO_2-WO_3 (Submitted-2017).
- **S. Lotfi,** M. Pazouki, A.H. Zamzamian, F. Zamani, A. Hejazi, Production of biodiesel from microalgae, Iranian Journal of Chemistry and Chemical Engineering, Volume 54, Number 10, 2011.
- M. Mousavi, S. Kiani, **S. Lotfi**, N. Naeemi, M. Honarmand, Transient and Spatial Modeling and Simulation of Polybrominated Diphenyl Ethers Reaction and Transport in Air, Water and Soil", *International Journal of Environmental Science and Technology, Volume 5, Number 3, 2008.*

Oral presentations

- **Samira Lotfi**, Gregory S. Patience, Catalytic conversion of unwashed lignin in a capillary fluidized bed, *The 3rd Annual McGill-EcolePolytechnique Joint Research Day, Montreal, Quebec, Canada, 2015.*
- **Samira Lotfi**, Gregory S. Patience, Catalytic conversion of unwashed lignin in a capillary fluidized bed, *64th Canadian Chemical Engineering Conference, Niagara fall, Ontario, 2014.*
- **Samira Lotfi**, Gregory S. Patience, Heterogeneous Catalytic Oxidation of Lignin, *4th International Forest Bio-refinery Symposium, Montreal, Quebec, 2015.*
- **Samira Lotfi**, Gregory S. Patience, Lignin catalytic conversion in a gas-solid capillary fluidized bed, *2nd International Forest Bio-refinery Symposium, Montreal, Quebec, 2013.*

Posters

- **Samira Lotfi**, Gregory S. Patience, Synthesis of carboxylic acids by oxidation of lignin in the presence of heterogeneous catalyst, *62thCanadian Chemical Engineering Conference, Vancouver, British Columbia, 2012.*
- **Samira Lotfi**, Mohammad Pazouki, AmirhosseinZamzamian, Production of Biodiesel from Microalgae Using RhizopusOryzae, *6th national biotechnology congress of I. R. Iran, 2010.*
- **Samira Lotfi**, Mohammad Pazouki, AmirhosseinZamzamian, Production of biodiesel from microalgae with Rhizopusoryzae immobilized cells", *6th International Chemical Engineering Congress and Exhibition, Kish, Iran, 2009.*
- **Samira Lotfi**, Necessity of engagement and education on renewable energy, *12th National Iranian Congress of Chemical Engineering, Tabriz, Iran, 2008.*
- **S. Lotfi**, M. Fahar, M. Pazouki, Production of Biodiesel from Microalgae; a way Towards CO2 Mitigation, *1st conference of carbon market and clean development mechanism in petrochemical and allied industries, Tehran, Iran, 2007.*
- M. Fahar, M. Pazouki, **S. Lotfi**, L. Sheikhani, K. Hadipour, Syngas production by biomass gasification, *1st conference of carbon market and clean development mechanism in petrochemical and allied industries, Tehran, Iran, 2007.*