# Kazi Monzure Khoda, Ph.D.

Post-Doctoral Researcher

Department of Chemical Engineering | Qatar University

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## QUALIFICATION SUMMARY

- Possesses 7 years' R&D experience
- Expert in different optimization algorithms (i.e., Genetic Algorithm, SQP, Neural Network)
- Developed a customized separation technique and online monitoring system for chiral drug separation named as *i*-SCC
- Working on sustainable plant design through process integration
- Took charge of developing an integrated approach to the simultaneous design and operation of industrial facilities for abnormal situation management
- 5 years' experience of managing financial portfolio in-line with money management by investing in global FOREX, CFD and STOCK market
- Contributed strategic insight in analysing experimental data for system optimization using mathematical and statistical models

## KEY CONTRIBUTION AREAS

- Process Optimization
- Process Integration
- Financial Modelling
- Process Design
- Process Safety
- Ad hoc Reporting
- Process Simulation
- Process Control
- Market Analysis

## PROFESSIONAL EXPERIENCE

**Post-Doctoral Researcher** — *December, 2013 – Present*

Department of Chemical Engineering, Qatar University

**Project Title:** An Integrated Approach to the Simultaneous Design and Operation of Industrial Facilities for Abnormal Situation Management (NPRP 5-351-2-136)

**Project Updates:**

- Primary objective of this project is to develop sustainable approaches for abnormal situation management in chemical industries.
- We have developed an optimization framework and some energy alternatives tools for industrial flare reduction.
- A Greenhouse gas calculator is developed in-house.
- A complete historical database of ethylene plant flaring is prepared with the collaboration with industrial advisory (Q-Chem).

**Project Officer** — *February, 2013 – November, 2013*

School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore

**Project Title:** Large-scale Chromatography with green Solvents: Fundamentals and Novel-processes (GSK-Singapore Partnership project with NTU by Economic Development Board (EDB))

**Delivered Results:**

Worked on different feed injection mechanism in super critical fluid chromatography (SFC). Played an instrumental role to develop initial modelling for SFC and prepared the framework for measuring adsorption isotherm in large-scale SFC based on Frontal analysis.

**PhD Student** — *January,2009 – January, 2012*

School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore
**PhD Dissertation:** Experimental Study of Optimizing control of Continuous Chromatographic Separation Process
**Delivered Results:**
This thesis introduced an improved single-column chromatographic (*i*-SCC) separation process with the final objective to make this process distinct from existing single-column chromatographic separation process by physical modifications and conceptual advances. The performance of this *i*-SCC process was evaluated by experimental implementation to separate a mixture of guaifenesin enantiomers.

**Teaching Assistant**

Worked as teaching assistant in the School of Chemical and Biomedical Engineering, NTU in four chemical engineering courses: Advanced reaction engineering, Process control, MATLAB workshop and Chemical/Bioengineering lab.

**Lecturer** in Green University of Bangladesh — *January, 2008 – December,2008*

**Workshop and Training Course**

Worked as trainee in following short course:

- "Water and Energy Security Workshop" – arranged by TAMUQ and British Council, Doha, Qatar — *February 2015*
- "Faculty Development Workshop" – arranged by Microsoft Technology Enriched Instruction — *April 2014*
- "Sustainable Design through Process Integration"- arranged by Process Technology, Doha, Qatar — *March 2014*

**Industrial Training**

Worked as trainee in the following industries:

- Qatar Chemical Company Ltd (Q-Chem) — *April 2014*
- Bangladesh Insulator & Sanitary ware Factory Ltd., Dhaka, Bangladesh — *July 2007*
- Urea Fertilizer Factory (UFFL), Ghorasal, Bangladesh — *March 2004*

## EDUCATION

**Doctor of Philosophy** — Nanyang Technological University (NTU), Singapore — *July 2013*

**Bachelor of Science in Chemical Engineering (**CGPA: **3.75/4.00)** — Bangladesh University of Engineering and Technology (BUET), Bangladesh — *January 2008*

## TECHNICAL SKILLS

*Language & software:* MATLAB, LINGO, LabVIEW, Aspen HYSYS, Auto CAD, Latex, Origin, EndNote, MetaQuotes Language (MQL4/MQL5), JFOREX
*Instruments:* High pressure liquid chromatography (HPLC), Supercritical fluid chromatography (SFC), Gas chromatography (GC), Magnetic suspension balance

## AWARDS AND HONORS

**Microsoft Faculty Fellow** - Microsoft — *April, 2014*
**Certificate of Completion of Sustainable Design through Process Integration Training Course** - Process Technology, Qatar — *March, 2014*
**Graphical system design achievement awards** - National Instruments ASEAN — *2011*

**Research scholarship** - Nanyang Technological University, Singapore *January,2009 – January, 2012*
**Dean's list awards** - Bangladesh University of Engineering and Technology *2003 - 2007*
**Technical scholarship -** Bangladesh University of Engineering and Technology *2003 - 2007*

## REFERENCES

**Dr. Fadwa T. Eljack**
Assistant Professor, Department of Chemical Engineering, Qatar University, P.O. Box: 2713 – Doha – Qatar
Tel: +974 4403 4141 Fax: +974 4403 4131 Email: Fadwa.Eljack@qu.edu.qa (He is my current supervisor)

**Dr. Mohammad Aman Ullah**
Assistant Professor, Department of Chemical Engineering, Qatar University, P.O. Box: 2713 – Doha – Qatar
Tel: +974 4403 4162 Fax: +974 4403 4131 Email: Aman@qu.edu.qa (He was my PhD supervisor in NTU, Singapore)

**Dr. Anutosh Chakraborty**
Assistant Professor, Thermo Fluids & Marine Engineering Cluster, School of Mechanical & Aerospace Engineering, College of Engineering, Nanyang Technological University, Singapore
Tel: +65 6790 4222 Email: achakraborty@ntu.edu.sg (He was the external of my PhD thesis)

## PUBLICATIONS

### Patent

- [P1] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Design of an improved single-column chromatographic separation process and its online monitoring system. (patent pending).

### Journal Papers

- [J1] **Monzure-Khoda Kazi**, Bijan Medi, and M. Amanullah. Optimization of an Improved Single-Column Chromatographic Process for the Separation of Enantiomers. *Journal of Chromatography A,* 2012. 1231: p. 22-30. ( doi:10.1016/j.chroma.2012.01.057).
- [J2] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Nonlinear direct inverse method: a way to combine nonlinear calibration with isotherm determination. *Adsorption*, 2013, p. 1-12. (doi: 10.1007/s10450-013-9511-x).
- [J3] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Optimal performance of single-column chromatography and simulated moving bed processes for the separation of optical isomers. *IOP Conference Series: Materials Science and Engineering, 46, 012021.* (doi:10.1088/1757-899X/46/1/012021)
- [J4] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Experimental implementation of improved single-column chromatographic separation process. Ind. Eng. Chem. Res.*, 2015, 54 (25), pp 6527–6539* (doi: 10.1021/acs.iecr.5b00553)
- [J5] **Monzure-Khoda Kazi**, Fahd Mohammed, Ahmed Mhd Nabil AlNouss and Fadwa Eljack. Multi-objective optimization methodology to size cogeneration systems for managing flares from uncertain sources during abnormal process operation. *Computers and Chemical Engineering, 2015* vol 76, p. 76-86 (doi:10.1016/j.compchemeng.2015.02.012)
- [J6] Yun Dai, **Monzure-Khoda Kazi**, Timothy T.Y. TAN. Effects of injection strategies on the enantioseparation of Flubbiprofen in analytical and preparative supercritical fluid chromatography. (Submitted in *Journal of Chromatography A*)

### Conference Papers

- [C1] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Optimization of an Improved Single-Column

Chromatographic Process for the Separation of Enantiomers. *AIChE Annual Meeting, Minneapolis, USA, 2011*

- [C2] Bijan Medi, **Monzure-Khoda Kazi**, and M. Amanullah. Comparison of Single-Column Chromatography and Simulated Moving Bed Process at Optimal Operating Points. *AIChE Annual Meeting, Minneapolis, USA, 2011*
- [C3] **Monzure-Khoda Kazi**, Bijan Medi, and M. Amanullah. Nonlinear direct inverse method: a way to combine nonlinear calibration with isotherm determination. *AIChE Annual Meeting, Pittsburg, USA, 2012*
- [C4] **Monzure-Khoda Kazi**, Bijan Medi, and M. Amanullah. Optimal performance of single-column chromatography and simulated moving bed processes for the separation of optical isomers. *MOIME, Jakarta, Indonesia, 2013.*
- [C5] **Monzure-Khoda Kazi**, Fahd M. Mohammed, Ahmed Mhd Nabil AlNouss, and Fadwa T. Eljack. Optimal Sizing of Cogeneration (COGEN) System to Manage Flares from Uncertain Sources during Abnormal Process Operations. *AIChE Annual Meeting, Atlanta, USA, 2014.*
- [C6] **Monzure-Khoda Kazi**, Fahd M. Mohammed, Ahmed Mhd Nabil AlNouss, and Fadwa T. Eljack. Optimal Sizing of Cogeneration (COGEN) System to Manage Flares from Uncertain Sources during Abnormal Process Operations. *International Symposium Advances in Chemical Engineering and Sciences, Doha, Qatar, 2014.*
- [C7] Fahd M. Mohammed, **Monzure-Khoda Kazi**, and Fadwa T. Eljack. Tracking of GHG Emissions and Tax Implication During Normal/Abnormal Situations – Ethylene Process Base Case Industrial Application. *4th International Gas Processing Symposium 2014.*
- [C8] Fahd M. Mohammed, **Monzure-Khoda Kazi**, and Fadwa T. Eljack. Greenhouse Gas Calculator for Tracking Combustion and Process Upset Emissions: Methodology and Visual Representation for Simple Ethylene Process Base Case. *AIChE Annual Meeting, Atlanta, USA, 2014.*
- [C9] Fahd M. Mohammed, **Monzure-Khoda Kazi**, and Fadwa T. Eljack. Assessing the Environmental Impact of a Flare Minimization Approach using CO2 Emissions and Wobbe Index Calculator – An Ethylene Process Case Study. *AIChE Annual Meeting, Atlanta, USA, 2014.*
- [C10] **Monzure-Khoda Kazi**, Fahd M. Mohammed, Ahmed Mhd Nabil AlNouss, and Fadwa T. Eljack. Robust Optimization Framework for sizing of Cogeneration (Co-Gen) System to Manage Flares from Uncertain Sources during Abnormal Process Operations. *Qatar Foundation Annual Research Conference, Doha, Qatar, 2014.*
- [C11] **Monzure-Khoda Kazi**, Fahd M. Mohammed, Ahmed Mhd Nabil AlNouss, and Fadwa T. Eljack. Sustainable Approaches for Abnormal Situation Management of an Ethylene Process Plant. *Ethylene Producers Conference, AIChE Spring Meeting, Austin, USA, 2015.*
- [C12] Ahmed Mhd Nabil AlNouss, **Monzure-Khoda Kazi**, Fahd M. Mohammed, and Fadwa T. Eljack. Importance of Process and Flaring Data and Its Analysis for the Management of Abnormal Situations: An Ethylene Process Case Study. *AIChE Spring Meeting, Austin, USA, 2015.*
- [C13] **Monzure-Khoda Kazi**, and M. Amanullah. Optimizing Control of an Improved Single-Column Chromatographic Process for the Separation of Enantiomers: Experimental Implementation. *4th International Congress on Sustainability Science & Engineering (ICOSSE'15), Balatonfüred, Hungary, 2015.*

**Invited Talk**

- [T1] **Monzure-Khoda Kazi**, and Fadwa T. Eljack. Sustainable Approaches for Abnormal Situation Management. *Water and Energy Workshop, Doha, Qatar, 2015.*
- [T2] **Monzure-Khoda Kazi**, and Fadwa T. Eljack. Sustainable Approaches for Abnormal Situation Management. *My Gateway to Research, Doha, Qatar, 2015.*