

Mohammad Sharif Khan

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Present Occupation:

Designation: **Research Associate B**
Present Institute: Thayer School of Engineering, Dartmouth College, 03755 NH, USA
Mentor: *Prof. Jane E. Hill*
Project: **Pediatric tuberculosis diagnosis by exhaled breath
Breath biomarkers of tuberculosis for non-human primates**
Duration: From October 2018 to September 2020
Responsibilities: Defining the project goals, design experiments and conducting work in lab and interpreting results.
Interacts with collaborators from different departments and institutions on a regular basis
Serves as major contributing member of the research team, participating in the development of research hypotheses and planning the project parameters and scope
Authors and co-authors research findings and presents at national conferences
Mentors junior members of the research group
Conducts instrument design, construction, testing and validation
Independently conducts research of aspects of multiple projects or runs the research laboratory while engaged in academic/intellectual endeavors
Responsible for establishing and maintaining experimental schedules and deadlines
Assists in grant writing and manuscript writing

Previous Occupation:

Designation: **PhD in Analytical Chemistry (Monash University)**
Supervisors: *Prof. Philip J. Marriott and Dr. Sung-tong Chin*
Present Institute: School of Chemistry, Monash University, Clayton, Australia
Duration: From September 2014 to Aug 2018
Title of Thesis: Investigate a new mode of operation of multidimensional gas chromatography method using pressure tuning principle
Committee: *Professor Milton Hearn (Monash) and Professor Terence Turney (Monash), Professor Egmont Rohwer (University of Pretoria), Dr. James Harynuk (Uni of Alberta) and Professor Cláudia Alcaraz Zini (Universidade Federal do Rio Grande do Sul)*
Responsibilities: Conceptual development of chromatography systems and design of experiments
Preparing samples for experimentation by appropriate calculation and measurement
Selecting, collecting, labelling, and maintaining sample materials for experiments
Participating in fabricating, installing and modifying chromatography instrument Performing tests to acquire data using chromatography and mass spectrometry
Generating results using mathematical calculations, and computations of measurements
Compiling data following research experiments, analysing data, writing scientific reports
Publishing research articles in international journals in analytical chemistry

Designation: **Teaching associate (Casual)**
Present Institute: School of Chemistry, Monash University, Clayton, Australia
Duration: From June 2016 to Aug 2018
Responsibilities: Supporting research and chemical testing in the senior chemistry laboratory
Preparing experimental data and checking details of experiments and learning objectives
Checking, calibrating and maintaining test equipment
Demonstrating laboratory assignments and providing guideline during the students' test
Assisting students with tests, experiments, and undergraduate project work
Helping and guiding students to analyse and generate results
Grading quizzes, laboratory reports for supervising faculty within a deadline

Designation: **Research Assistant (Full time)**
Institute: Kulliyah of Pharmacy, International Islamic University Malaysia, Kuantan Campus, Bandar Indera Mahkota Campus, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang Darul Makmur
Duration: From January 2013 to December 2013 And From June-December 2012
Responsibilities: Collecting information of research background and writing literature review
Collecting, labelling and storing sample materials and appropriate chemicals
Preparing sample for experiment by soxhlet extraction and supercritical fluid extraction
Developing green and sustainable extraction technologies through co-solvent modified supercritical CO₂ extraction system by fabricating and modifying supercritical fluid
Participating in fabricating, installing and modifying TLC, GC-MS, FTIR
Acquiring data from equipment, analysis of data and generating results
Writing scientific reports and articles and presenting research in scientific conferences

Professional Membership:

Member of American Chemical Society (ACS), USA
Member of Royal Australian Chemical Institute (RACI), Australia
Member of Australian Centre for Research on Separation Science (ACROSS), Australia
Member of International Association of Advanced Materials (IAAM), Sweden
Member of American Oil Chemist Society (AOCS), USA
Member of The New York Academy of Sciences (NYAS), USA

Education:

2018-2014: **PhD** (Research; Major: *Analytical Chemistry*) Monash University.
Completion: January 2019

2014-2012: **M.Sc** (Research; Major: *Pharmaceutical Chemistry*) International Islamic University Malaysia (Pass with 81% Mark)

2011-2007: **B.S (hons)** (*Nutrition and Food Science*) University of Dhaka, Bangladesh. CGPA: 3.32 out of 4.0

Award:

2017, Outstanding research work by Australian Researchers' from ACS publication, Washington, DC 20036 USA.

2018, Postgraduate Publication Award, Monash University, Australia.

2018, Monash Departmental Scholarship from Monash University, Australia.

2014, Monash Graduate Scholarship (MGS), Monash University, Australia.

2014, Int. Postgrad Research Scholarship (IPRS), Monash University, Australia.

2013, "Rector Scholarship" of Int. Islamic University Malaysia, Malaysia.

Medal:

Richard sack's award, 13th GC×GC and 40th International Capillary Chromatography Symposium, RIVA DEL GARDS, ILATY.

Bronze medal at Malaysian Technology expo, 2014.

Gold medal at IIUM Research, Invention and Innovation Exhibition 2013.

English Test:

International English Language Testing System (IELTS) 7

Certification:

Goal Achievement-Leap into Leadership: Monash Uni. Australia.
Project Management- Leap into Leadership: Monash Uni. Australia.
Personal Brand- Leap into Leadership: Monash Uni. Australia.
SPSS course-University of Dhaka, Bangladesh.
R for Data Science, Harvard University (edX Online module)

Community Leadership:

Publication secretary (executive) of Bengali Language and Cultural School Melbourne, 2016 to 2018.
Sports secretary (executive) of Bengali Language and Cultural School Melbourne, 2015-16.

Highlighted Research:

- **Keynote and Young leader** speaker for 13th GC×GC Symposium (RIVA 2018) and International Association of Breath research (IABR 2019), respectively.
- **LC-GC** magazine in all three editions [LC GC North America, 37(3), 200, LC GC Europe, 37(8), 422 & LCGC Asia Pacific, 21(4), 8–13] published my article as a research highlight on “GC×GC” area. Link: <https://secure.link/crRe9IwT>
- “**Highlighted Outstanding work from Authors in Australia**” special issue published by American Chemical Society highlighted the work published in Analytical Chemistry (2016). Link: <https://secure.link/qdMNeD6k>
- **SeperationNOW** magazine highlighted the work published in Biomedical Chromatography (2015) in a news, “*Pereskia bleo*: A prickly source of antioxidants?” Link: <https://secure.link/mxSBsHKI>
- Article published in Journal of Food Engineering in 2013 is the top cited article for that journal. Link: <https://secure.link/G8vaD6WM>
- Featured article about my research at ACROSS Annual Report 2016. Link: <https://secure.link/RjWNHnmu> (page: 39)
- **Richard Sack’s award** for the presentation at the 40th International Symposium on Capillary Chromatography and 13th GC×GC Symposium (RIVA 2016). Link: <https://secure.link/KJdvGk6o>

Online Profile:

- ORCID <https://secure.link/3X75ZL8l>
- Scopus <https://secure.link/H7tkqmS4>
- Researcherid <https://secure.link/sQkBHR9m>
- Publons <https://secure.link/blosWF7Y>
- LinkedIn <https://secure.link/BCRGJX5f>
- Researchgate <https://secure.link/cPbQdR1S>

Editorial role:

- Associate Editor in **Frontier in Chemistry**, Frontiers Publisher, UK: 2019 onward

- Associate Editor in **Review in separation science (RSS)**, Beta science Press, The Netherlands, 2019 onward
- Guest editor and member of the editorial board **Journal of Applied Bioanalysis (JAB)**, Beta science Press, The Netherlands, 2019 onward
- Guest editor of the editorial board **Current Chromatography**, Bentham Science, UAE, 2019 onward

Reviewers role: [Journal]-[Times of review]

- [Food Chemistry]-[5]
- [Journal of CO₂ Utilization]- [5]
- [Frontiers in Chemistry]-3
- [Molecules]-1
- [Expert Review of Anti-Infective Therapy]- [1]
- [Applied Sciences]-[1]

Scholarly Publications: (published)

1. **Sharif K.M.**, & Marriott, P. J. (2019). Pressure Tuning: Increasing the Flexibility of Comprehensive Two-Dimensional Gas Chromatography. *LC GC NORTH AMERICA*, 37(3), 201. Also published in LC GC Europe, 37(8), 422 AND LCGC Asia Pacific, 21(4), 8–13.
2. **Sharif, K.M.**, Kulsing, C., Junior, A.I. da Silva, Marriott, P.J. (2018). Second dimension column ensemble pressure tuning in comprehensive two-dimensional gas chromatography, *Journal of Chromatography A*, 1536, 39-49.
3. **Sharif, K.M.**, Kulsing, C., Marriott, P.J. (2016). Pressure tuning of first dimension columns in comprehensive two-dimensional gas chromatography. *Analytical Chemistry*, 88, 9087-9094.
4. **Sharif, K.M.**, Chin, S.T., Kulsing, C., Marriott, P.J. (2016). The microfluidic Deans switch: 50 years of progress, innovation and application. *TrAC Trends in Analytical Chemistry*, 82, 35-54.
5. **Sharif, K.M.**, Kulsing, C., Chin, S.T., Marriott, P.J. (2016). Relating pressure tuned coupled column ensembles with the solvation parameter model for tunable selectivity in gas chromatography. *Journal of Chromatography A*, 1455, 156-162.
6. **Sharif K.M.**, Rahman M. M., Azmir J., Khatib A., Hadijah S., Zaidul I.S.M. (2015). Multivariate analysis of PRISMA optimized TLC image for predicting antioxidant activity and identification of contributing compounds from *Pereskia bleo*. *Biomedical Chromatography*, 29(12), 1826-33.
7. **Sharif K.M.**, Rahman M. M., Azmir J., Khatib A., Hadijah S., Mohamed A., Sahena F, Zaidul I.S.M. (2014). Orthogonal Partial Least Square (OPLS) model for rapid prediction of antioxidant activity of *Pereskia bleo* using Fourier Transformed Infrared Spectroscopy. *Analytical Letter*, 47(12), 2061-70.
8. **Sharif, K.M.**, Rahman, M.M., Azmir, J., Mohamed, A., Jahurul, M.H.A., Sahena, F., Zaidul, I.S.M. (2014). Experimental design of supercritical fluid extraction. *Journal of Food Engineering*, 124, 105–116.
9. **Sharif K.M.**, Rahman M. M., Azmir J. Hadijah S., Selim, M.U., Fahim, T.K., Zaidul I.S.M. (2014). Ethanol modified supercritical carbon dioxide extraction of antioxidant rich compounds from *Pereskia bleo*. *Journal of Industrial and Engineering Chemistry*, 21, 1314-1322.
10. **Sharif K.M.**, Rahman M. M., Zaidul I.S.M., Azmir J., Akanda, M.J.H., Mohamed, A., Shamsudin, S.H. (2013). Pharmacological relevance of primitive leafy cactuses *Pereskia*. *Research Journal of Biotechnology*, 8(12), 134-142.

11. Nolvachai, Y., Kulsing, C., **Sharif, K. M.**, Wong, Y. F., Chin, S. T., Mitrevski, B., & Marriott, P. J. (2018). Multi-column trajectory to advanced methods in comprehensive two-dimensional gas chromatography. *TrAC Trends in Analytical Chemistry*, 106, 11-20.
12. Azmir J., Zaidul I.S.M., Rahman M.M., **Sharif K.M.**, Mohamed A., Sahena F., Jahurul M.H.A., Ghafoor K., Norulaini N.A.N., Omar A.K.M. (2013). Techniques for extraction of bioactive compounds from plant materials. *Journal of Food Engineering*, 117(4), 426–436.
13. Jahurul M.H.A., Zaidul I.S.M., Norulaini N.A.N., Sahena F., Jinap S., Azmir J., **Sharif K.M.**, Omar A.K.M. (2012). Cocoa butter fats and possibilities of substitution in food products concerning cocoa varieties, alternative sources, extraction methods, composition, and characteristics. *Journal of Food Engineering*, 117(4), 467–476.
14. Azmir, J., Zaidul, I.S.M., Rahman, M.M., **Sharif, K.M.**, Sahena, F., Jahurul, M.H.A., Mohamed. A. (2014). Optimization of Oil Yield of *Phaleria macrocarpa* Seed using Response Surface Methodology and Its Fatty Acids Constituents. *Industrial Crops and Products*, 52, 405–412.
15. Zaidul I.S.M.; Noda T., Sahena F., **Sharif K.M.**, Azmir J., Smith Jr. R. L. (2014). Reduction of gelatinization temperatures of starch blend suspensions with supercritical CO₂ treatment. *The Journal of Supercritical Fluid*, 95, 499-505.
16. Azmir, J., **Sharif, K.M.**, Rahman, M.M., Salim, M.U., Parvaneh, H., Mohamed, A., Zaidul I.S.M. (2014). Supercritical Fluid Extraction of highly unsaturated oil from *Phaleria macrocarpa* seed. *Food Research International*, 65(C), 394-400.
17. Fahim T.K., Zaidul, I.S.M., Bakara, Abu, Salim, U.M., Awang, M.B., Sahena, F., Jalal, K.C.A., Sharif, K.M., Sohrab, M.H. (2014). Particle formation and micronization using non-conventional techniques, *Chemical Engineering and Processing: Process Intensification*, 86, 47-52.

Scholarly Publications: (non-published; % completion is provided on a scale of 10)

1. **Sharif, K.M.**, Chin, S.T., Marriott, P.J. (2019). Approaches to using retention indices with coupled column pressure tuning in Gas Chromatography. *Journal of Chromatography A*, Under preparation (9/10).
2. **Sharif, K.M.** and Marriott, P.J. (2019). Thermodynamic and QSRR of pressure tuning coupled column on solute retention parameters, *Journal of Chromatography A*, Under preparation (9/10).
3. **Sharif K.M.**, Bobak C, Mellors TR, Flynn JL, Scanga CA, Lin PL, Azmir J, Beccaria M, and Hill JE (2020), The early breath biomarkers of tuberculosis using model macaque monkey, *Nature communication*, Under preparation (7/10).
4. Azmir J, **Sharif K.M.**, Mellors TR, Flynn JL, Scanga CA, Lin PL, and Hill JE, (2019), Baseline breath volatiles of healthy Non-Human Primates, *Journal of Breath Research*, Under preparation (8/10).
5. Kang L, Coyne K, **Sharif K.M.**, Hill JE (2019), Volatile Molecular Profiling of Floral Odors from *Amorphophallus titanum* using TD-GC×GC-TOFMS, *Plant biology*, Under preparation (7/10).
6. Carly B, **Sharif K.M.**, Hill JE (2019), Breath volatile from Pediatric TB patients (2019), *Scientific report*, Under preparation (8/10).
7. Kwame W, Victor B, Carly B, **Sharif K.M.** and Hill J, (2020) Diagnosis PJI's Using Volatile Metabolic Signatures of Infecting Micro-organisms, *Journal of Chromatography B*, Under preparation (7/10).

8. **Sharif K.M.**, Azmir J, Carly B and Hill J, (2020) Sterile pre-infection status of ferret from Influenza by volatile breath molecules, *Journal of Breath Research*, Under preparation (6/10)
9. **Sharif K.M.**, Frederick Sebastian, Bishnu Regmi, Lili Kang, Carly Bobak, Jannatul Azmir and Jane E Hill (2020), Breath analysis for tuberculosis research: current status and future perspectives, *Plos One*, under preparation (3/10).

Conference:

1. **Sharif K.M.**, Bobak C, Mellors TR, Flynn JL, Scanga CA, Lin PL, Azmir J, Beccaria M, and Hill JE. Breath biomarker of tuberculosis using Macaque monkey (2019), *LABR-Breath Summit 2019*, Sep 8-11, 2019. Leicestershire, UK. (**Young Leader Keynote**)
2. Theodore R. Mellors, Marco Beccaria, Carly Bobak, **Sharif K.M.** and Jane E. Hill, (2019) Breath biomarkers of tuberculosis infection, *Big Data in the Life Sciences Symposium*, Dartmouth College.
3. Lili Klang, **Sharif K.M.**, Kelsey Coyne, Daniella Kobiake and Jane Hill (2019), Corpse flower smell analysis by GCxGC. *Big Data in the Life Sciences Symposium*, Dartmouth College.
4. **Sharif K.M.**, Marriott, P.J. (2018). Pressure tuning coupled column ensemble in gcxgc mechanism, dimensions and retention index alignment, *42nd International Symposium on Capillary Chromatography and 15th GCxGC Symposium*, RIVA DEL GARDS, ITALY. (Keynote talk)
5. **Sharif K.M.**, Marriott, P.J. (2017). Pressure tuning coupled column ensembles for comprehensive two-dimensional gas chromatography, *8th International Conference on Green and Sustainable Chemistry*, 23-26th July 2017, Melbourne Australia.
6. Marriott, P.J., **Sharif K.M.**, Kulsing, C. (2017). Pressure tuning in GCxGC - a viable strategy to support improved separation through adjustable apparent phase polarity, *41th International Symposium on Capillary Chromatography and 14th GCxGC Symposium*, Fort Worth, TX 76102, USA.
7. **Sharif K.M.**, Kulsing, C., Marriott, P.J. (2016). Pressure tuning of the first dimension column in GCxGC. *40th International Symposium on Capillary Chromatography and 13th GCxGC Symposium*, RIVA DEL GARDS, ITALY.
8. **Sharif K.M.**, Kulsing, C., Marriott, P.J. (2016). Comprehensive two-dimensional gas chromatography with pressure tuning first dimension coupled columns, in: *24th RACI R&D Topics Conference*, University of Western Sydney, Sydney, Australia, 2016.
9. **Sharif K.M.**, Kulsing, C., Chin, S.-T., Marriott, P.J. (2016). Pressure tuning of the first dimension column in GCxGC, in: *ASASS 2 - ACROSS International Symposium on Advances in Separation Science*, Hobart Function and Conference Centre, Tasmania, Australia, 2016.
10. **Sharif K.M.**, Chadin Kulsing and Philip J. Marriott (2016) A new paradigm in development of comprehensive two dimensional gas chromatography separations based on a novel dual column primary dimension, in: *ASASS 2 - ACROSS International Symposium on Advances in Separation Science*, Hobart Function and Conference Centre, Tasmania, Australia, 2016.
11. **Sharif K.M.**, Chadin Kulsing, Sung-Tong Chin and Philip J. Marriott (2015). Coupled column selectivity interpreted using solvation parameters, *23rd RACI R&D Topics Conference*, 6-9th December 2015, University of Melbourne, Melbourne, Australia.
12. **Sharif K.M.**, Sung-Tong Chin and Philip J. Marriott (2015). Pressure tuning in gas chromatography, *Australian Centre for Research on Separation Sciences Annual Meeting*, 2015, 9-10th July 2015, Hobart Function and Conference Centre, Tasmania, Australia.

13. **Sharif K.M.**, Md. M. Rahman, Zaidul I. Sarker, Philip J. Marriott (2014). Antioxidant activity of Pereskia herb by infrared spectroscopy, *22nd RACI R&D Topics Conference*, 13th-15th December 2014, Flinders University, Adelaide, Australia.
14. Azmir J, Rahman M.M., **Sharif K.M.**, Zaidul I.S.M. (2014). Supercritical fluid extraction of high grade oil from Mahkota dewa (*Phaleria macrocarpa*) seeds. *2nd International Conference on Biological and Chemical Process (ICBCP 2014)*, 27-28 March, 2014. Kuala Lumpur, Malaysia.
15. Azmir J, Zaidul I.S.M., **Sharif K.M.**, Rahman M.M. (2014). Supercritical fluid extraction of fatty acids from Phaleria macrocarpa seed. *Malaysian Technology expo 2014*, 20-22 February 2014, Putra World Trade Centre, Kuala Lumpur, Malaysia.
16. Azmir J., Zaidul I.S.M., Rahman M.M., **Sharif K.M.** (2013). Artificial neural network for prediction of oil yield from Phaelaria macrocarpa seed using n-hexane. *27TH Annual Meeting of Malaysian Society of Pharmacology and Physiology (MSPP 2013)*, 6-8 September, 2013. MS garden Hotel, Kuantan, Malaysia.
17. Zaidul I.S.M., Akanda J.H., Sahena F., Norulaini N.A.N., **Sharif K.M.**, Omar A.K. (2013). Extraction of cocoa butter equivalent fat from mango seed kernel using supercritical fluid extraction (SFE). *IIUM Research, Invention and Innovation Exhibition 2013, 19-20th February 2013, International Islamic University Malaysia (IIUM)*, Gombak, Malaysia.
18. Rahman, M.M., Mohsina, B. S., **Sharif, K.M.**, Kamaruzzamanb, B. Y., Awang, M. B. (2013). Highly Efficient Activated Carbon from Palm Shell as an Adsorbent of Toxin/Poison. *IIUM Research, Invention and Innovation Exhibition 2013, 19-20th February 2013, International Islamic University Malaysia (IIUM)*, Gombak, Malaysia.
19. Jahurul M.H.A., Zaidul I.S.M., Norulaini N.A.N, Sahena F., Jinap S., **Sharif K.M.**, Jannatul A., Bennama M.M., Mohd Omar A.K. (2012). Supercritical carbon dioxide extraction of cocoa butter analogy fat from mango seed kernel oil: an optimization approach of response surface methodology. *International Conference on Science, Technology & Social Science (ICSTSS2012)*, 20-22 November, Vistana Hotel, Kuantan, Pahang, Malaysia.

References:

1. Jane E. Hill, PhD

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3. Sung-Tong Chin, PhD

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Praed Street, London W2 1NY, UK
Contact info: **Upon request**
Relationship: PhD supervisor

2. Philip John Marriott, PhD

Professor
School of Chemistry
Monash University
17, Rainforest Walk, 3168, VIC, Australia
Contact info: **Upon request**
Relationship: PhD supervisor

4. Zaidul Islam Sarker, PhD

Professor
IIUM
Indera Mahkota, Kuantan
25200, Pahang, Malaysia
Contact info: **Upon request**
Relationship: MSc supervisor