University of Alberta
Department of Chemical and Materials Engineering
9211-116 Street NW
Edmonton, Alberta, CANADA, T6G 1H9

Arvind RAJENDRAN
Ph: +1.780.492 3912
E-mail: arvind.rajendran@ualberta.ca
Web: http://bit.ly/UofALASP

PROFILE

Professional experience

Jul 2017 - till date	**University of Alberta**, Canada Tenured Full Professor, Department of Chemical and Materials Engineering
Sep 2012 - Jun 2017	**University of Alberta**, Canada Tenured Associate Professor, Department of Chemical and Materials Engineering
Aug 2011 - Aug 2012	**Nanyang Technological University**, Singapore Tenured Associate Professor, School of Chemical and Biomolecular Engineering
Jan 2005 - Aug 2011	**Nanyang Technological University**, Singapore Assistant Professor, School of Chemical and Biomolecular Engineering
Jul 1997 - Jun 1998	**SPIC Fertilizer Complex, Naptha based Ammonia plant**, India Engineering Management Trainee

Administrative leadership experience

Jul 2015 - till date (3 yr apt)	**University of Alberta**, Canada Associate Chair (Undergraduate studies) Department of Chemical and Materials Engineering * Involves $\approx$ 600 hrs of work annually leading departmental undergraduate activities for $\approx$ 1000 undergraduate students in two degree programs. * Lead activities for Canadian Engineering Accreditation Board visit in 2018. * Department representative in Faculty academic planning committee, scholarship committee, student services council.

Education

Oct 2000 - Sep 2004	**Swiss Federal Institute of Technology ETH Zurich**, Switzerland Doctor of Technical Sciences (PhD) in Process Engineering Diss. Topic: Adsorption and chromatography at supercritical conditions Advisors: Prof. Marco Mazzotti, Prof. Massimo Morbidelli
Jan 2004 - Mar 2004	**Technische Universität Hamburg-Harburg**, Germany Visiting Researcher Collaborators: Dr. Monika Johannsen, Prof. Gerd Brunner
Jul 1998 - Jul 2000	**National University of Singapore**, Singapore Master of Engineering in Chemical Engineering Diss. Topic: Analysis of a piston driven pressure swing adsorption process for air separation Advisor: Prof. Shamsuzzaman Farooq
Jul 1999 - Dec 1999	**University of Maine**, USA Short term scholar Advisor: Prof. Douglas M Ruthven
Oct 1993 - May 1997	**Annamalai University**, India Bachelor of Engineering in Chemical Engineering, First class with distinction

Professional Status

Aug 2015 - till date	**Association of Professional Engineers and Geoscientists of Alberta**, Canada Registered Professional Engineer (PEngg)

Journal Editoriships

Jan 2017 - till date	**Area Editor (Adsorption processes)** Adsorption- The Journal of the International Adsorption Society, Springer
Jan 2017 - till date	**Associate Editor** Canadian Journal of Chemical Engineering, John Wiley.
Apr 2016 - Dec 2016	**Associate Editor** Adsorption Science and Technology, SAGE publication.

Honours and awards

- **Teaching and mentoring**
  - Honoured at the 2010 Nanyang Technological University's annual convocation for providing "inspirational mentorship" to Zhang Chunyan, recipient of Koh Boon Hwee Scholar's award.

    "This award gives recognition to the influence of inspirational teaching, and the enduring bonds that are forged between teachers and students. Top NTU students who win this award will have achieved excellent academic performance, displayed strong leadership ability and demonstrated potential for contributing to society. Each winner will acknowledge an NTU faculty member and a teacher from his/her former junior college, polytechnic, or equivalent institution, who has inspired and contributed significantly to his/her education". The mentors are honoured by the President of the Republic of Singapore at the annual convocation.
  - Nanyang Award for Excellence in Teaching, 2009

    The Nanyang awards are "the highest recognition to individual faculty who have exhibited excellent teaching practice and enriched the learning experiences of their students through their enthusiasm, care and close rapport." Every year, the teaching awards are presented to about 1% of about 1600 faculty members in the university.
- **Research**
  - Best poster-prize at the 12th international conference on the fundamentals of adsorption (FOA12), Friderichshafen, Germany, May 2016

    FOA12 is largest gathering of scientists and practitioners of adsorption science and technology.
  - Best poster-prize at the symposium for preparative and industrial chromatography (SPICA) 2014, Basel, Switzerland, Oct 2014

    SPICA is one of the largest gathering of scientists and practitioners of Industrial Chromatography.
  - Best paper award, American Institute of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh, USA, 2012.

    The presentation "Optimization of a 4 Step PSA Cycle for CO_2 Capture From Post-Combustion Flue Gas" was adjudged as the best paper among 7 papers presented in the session on CO_2 Capture by Adsorption-Process and Storage at the AIChE Annual Meeting, Pittsburgh.
  - Pacifichem 2010 Young Scholar's Award

    Competitive travel grant to attend Pacifichem 2010 - The International Chemical Congress of Pacific Basin Societies, Honolulu, USA, Dec 2010.
  - Best paper award, Particle technology forum, American Institute of Chemical Engineers (AIChE) Annual Meeting, Nashville, USA, 2009.

    The presentation "Three Dimensional Microparticle Characterization Using Digital Holography" was adjudged as the best paper among 70 presented in the sessions under the category "Particle Production and Characterization" at the AIChE Annual Meeting, Nashville.
- **Academic and co-curricular**
  - AUETTA prize for outstanding achievements in academic, social, literary and leadership activities, 1997.

    This prize is awarded to one of 800 graduating students from the Faculty of Engineering and Technology, Annamalai University, India.
  - RM. Sethunarayanan endowment prize for academic excellence, 1996.

    This prize is awarded to 6 of 2400 students in the Faculty of Engineering and Technology, Annamalai University, India.

- **Honours received by students supervised**
  - Zhang Chunyan (Undergraduate researcher and Final Year project student), Koh Boon Hwee Scholar's award for "excellent academic performance, displayed strong leadership ability and demonstrated potential for contributing to society". The award, along with the Lee Kuan Yew gold medal is the highest honour awarded to graduating students, 2010.
  - Taslima Khanam (PhD student), best student presentation, 9th International symposium on Laser metrology, Singapore, 2008.

Membership in editorial boards of international journals

- Editorial Advisory Board, Frontiers in Energy- Advanced Fossil Fuel Technology, Frontiers, 2014- till date.
- Editorial Advisory Board, Adsorption- The Journal of the International Adsorption Society, Springer, 2013-2016.
- Editorial Advisory Board, Chemical Engineering & Technology, Wiley-VCH, 2011- till date.

Contributions to national policy documents

- Lead author, Technology primer on carbon capture, storage and utilization, National Climate Change Secretariat and National Research Fund, Singapore, 2011.

Membership in professional bodies

- International Adsorption Society (IAS) (2007-till date)
- American Institute of Chemical Engineers (AIChE) (2007-till date)
- Canadian Society of Chemical Engineering (CSChE) (2012-till date)
- American Society of Engineering Education (ASEE) (2013-till date)
- Association of Professional Engineers and Geoscientists of Alberta (APEGA) (2015-tll date)

RESEARCH

Research interests

- Carbon capture and storage
- Gas adsorption processes
- Large scale industrial chromatography: Supercritical Fluid Chromatography (SFC) and Simulated Moving Bed (SMB) chromatography
- Particle characterization and monitoring of crystallization

PUBLICATIONS

Contributions to Media

- Quoted on Saskpower CO_2 Capture project by The Globe and Mail, The National Post, The Edmonton Journal, The Saskatoon Star Phoenix, The Regina Leader post, Royal Society of Chemistry's Chemistry World, The Canadian Press, Oct 2014.

Edited Works

- Special edition of Adsorption- The journal of the international adsorption society, featuring papers presented at the 5th Pacific basin conference on adsorption science and technology, 16 (1-2), 2010.

Publications in refereed journals (* indicates corresponding author, boldface indicates trainee).

1. **S. A. Hosseinzadeh Hejazi**, L. Estupinan-Perez, K. N. Pai, A. Rajendran*, and S. Kuznicki. Single- and Dual-stage High-purity Oxygen Production using Silver-Exchanged Titanosilicates (Ag-ETS-10), Ind. Engg. Chem. Res., Submitted.
2. **S.G. Subraveti**, P. Nikrityuk and A. Rajendran*. Computational fluid dynamics study of viscous fingering in supercritical fluid chromatography. J. Chromatogr. A, 1534:150-160, 2018.

3. **S. A. Hosseinzadeh Hejazi**, L. Estupinan-Perez, A. Rajendran*, and S. Kuznicki. Cycle Development and Process Optimization of High-purity Oxygen Production using Silver-Exchanged Titanosilicates (Ag-ETS-10), Ind. Engg. Chem. Res., 56:5679-5691, 2017.
4. A. Rajendran*. Local equilibrium theory analysis of chromatographic peak shapes in the presence of adsorbing modifiers, J. Chromatogr. A, 1485:52-61, 2017.
5. **S. A. Hosseinzadeh Hejazi**, A. Rajendran*, J Sawada and S. Kuznicki. Dynamic column breakthrough and process studies of high purity oxygen production using silver exchanged titanosilicates (Ag-ETS-10), Ind. Engg. Chem. Res., 55:5993-6005, 2016.
6. **L. Estupinan-Perez, A. Avila**, J. Sawada, A. Rajendran* and S. Kuznickic Process optimization-based adsorbent selection for ethane Recovery from Residue Gas, Sepr. Purif. Technol., 168:19-31, 2016.
7. **A. Rajagopalan, A. Avila** and , A. Rajendran*. Do adsorbent screening metrics predict process performance? A process optimization based study for post-combustion capture of CO_2, Int. J. Greenhouse Gas Cont., 46:76-85, 2016.
8. S. Jermann, F. Ortner, A. Rajendran and M. Mazzotti*. Absence of experimental evidence of a delta-shock in the system phenetole and 4-tert-butylphenol on Zorbax 300SB-C18 J. Chromatogr. A, 1425:116-128, 2015.
9. N. Susarla, **R. Haghpanah**, A. Rajendran, S. Farooq and I. A. Karimi*. Energy and cost estimates for capturing CO_2 from a dry flue gas using pressure/vacuum swing adsorption Chem. Eng. Res. Des., 102:354-367, 2015.
10. **Y. Dai**, **G. Li** and A. Rajendran*. Peak distortions arising from large-volume injections in supercritical fluid chromatography. J. Chromatogr. A, 1392:91-99,2015.
11. **S. Krishnamurthy**, **R. Haghpanah**, A. Rajendran, and S. Farooq*. Simulation and optimization of a dual-adsorbent, two-bed vacuum swing adsorption process for CO_2 capture from wet flue gas. Ind. Engg. Chem. Res., 53:14462-14473, 2014.
12. **S. Krishnamurthy**, V. Rama Rao, S. Guntuka, **R. Haghpanah**, P. Sharratt, A. Rajendran, I. A. Karimi, M. Amanullah and S. Farooq*. Post combustion CO_2 capture by vacuum swing adsorption: A pilot plant study AIChE J., 60:1830-1842, 2014.
13. **R. Haghpanah**, A. Rajendran*, S. Farooq* and I. A. Karimi. Optimization of a one and two-staged kinetically controlled CO_2 capture process from post-combustion flue gas on a carbon molecular sieve Ind. Engg. Chem. Res., 53:9186-9198, 2014.
14. **M. Nurur Rahman**, A. Rajendran*, V. Kariwala, and A. Asundi. Effect of particle concentration and turbidity on particle characterization using digital holography. Chem. Eng. Res. Des., 92:249-255, 2014.
15. **T. Khanam**, A. Rajendran*, V. Kariwala, and A. Asundi. Measurement of two dimensional crystal shape using digital holography Crys. Growth Des., 13:3969-3975, 2013.
16. **R. Haghpanah**, **R. Nilam**, A. Rajendran*, S. Farooq* and I. A. Karimi. Cycle synthesis and optimization of a VSA process for post-combustion CO_2 capture AIChE J., 59:4735-4748, 2013.
17. A. Rajendran*. Recent developments in preparative chromatographic processes Curr. Opinion Chem. Engg, 2:263-270,2013. **Invited review article**
18. M. Mazzotti* and A. Rajendran. Equilibrium theory-based analysis of nonlinear waves in separation processes Ann. Rev. Chem. Biomol. Engg, 4:119-141,2013. **Invited review article**
19. J. Siitonen, T. Sainio* and A. Rajendran. Design of batch chromatography for separation of binary mixtures under reduced purity requirements. J. Chromatogr. A, 1286:55-68, 2013.
20. **R. Haghpanah**, A. Majumder, **R. Nilam**, A. Rajendran*, S. Farooq*, I. A. Karimi and M. Amanullah. Multi-objective pptimization of a 4-step adsorption process for post-combustion CO_2 capture using finite volume technique. Ind. Engg. Chem. Res., 52:4229-4265, 2013.
21. **R. Haghpanah**, A. Rajendran*, S. Farooq*, I. A. Karimi and M. Amanullah. Discrete equilibrium data from dynamic column breakthrough experiments. Ind. Engg. Chem. Res., 51:14834-14844,2012.

22. A. Rajendran*. Design of preparative supercritical fluid chromatography - A review. J. Chromatogr. A, 1250: 227- 249, 2012. **Invited review article for the special issue on 'Supercritical fluid extraction and chromatography'**.
23. J. Siitonen, T. Sainio* and A. Rajendran. Bypass chromatography - design and analysis of an improved strategy for operating batch chromatography processes. J. Chromatogr. A, 1230:77-92,2012.
24. **A. Majumdar**, V. Kariwala*, S. Ansumali and A. Rajendran. Lattice Boltzmann Method for multi-dimensional population balance models in crystallization. Chem. Engg. Sci., 70:121-134,2012.
25. **A. Majumdar**, V. Kariwala*, S. Ansumali and A. Rajendran. Lattice Boltzmann Method for population balance equations with simultaneous growth, nucleation, aggregation and breakage. Chem. Engg. Sci., 69:316-328, 2012.
26. M. M. Faruque Hassan, I. A. Karimi, S. Farooq, A. Rajendran and M. Amanullah. Surrogate-based VSA process optimization for post-combustion CO_2 Capture Comp. Aided. Chem. Engg., 29:402-406, 2011.
27. **T. Khanam**, M. Nurur-Rahman, A. Rajendran*, V. Kariwala, and A. K. Asundi. Accurate characterization of needle-shaped particles using digital holography. Chem. Engg. Sci., 66:2699-2706, 2011.
28. **W. Chen**, **R. Haghpanah**, A. Rajendran* and M. Amanullah. Optimization of isocratic supercritical fluid chromatography for enantiomer separation. J. Chromatogr. A., 1218:162-170, 2011.
29. A. Rajendran* and M. Mazzotti. Local equilibrium theory for the binary chromatography of species subject to a generalized Langmuir isotherm. 2. Wave interactions and chromatographic cycle. Ind. Engg. Chem. Res., 50:352-377, 2011.
30. **M.A. Khan**, A. Rajendran* and Z.P. Lai*. $\mathrm{Ni}-\mathrm{SiO_2}$/Silicalite-1 core-shell micromembrane reactors: A highly shape selective bi-functional catalyst. Ind. Engg. Chem. Res., 49:12423-12428, 2010.
31. **A. Majumdar**, V. Kariwala*, S. Ansumali and A. Rajendran. Entropic Lattice Boltzmann Method for crystallization processes. Chem. Engg. Sci., 65:3928-3936, 2010.
32. **A. Majumdar**, V. Kariwala*, S. Ansumali and A. Rajendran. Fast high resolution method for solving multi-dimensional population balances in crystallization. Ind. Engg. Chem. Res.,49:3862-3872, 2010.
33. **G. J. Chin**, **Z. H. Chee**, **W. Chen**, and A. Rajendran*. Solubility of flurbiprofen in CO_2 and CO_2+methanol. J. Chem. Engg. Data, 55:1542-1546, 2010.
34. **E. Darakis**, **T. Khanam**, A. Rajendran*, V. Kariwala, T. Naughton and A. Asundi. Microparticle characterization by digital holography. Chem. Eng. Sci., 65:1037-1044, 2010.
35. **W. Chen** and A. Rajendran*. Enantioseparation of flurbiprofen by supercritical fluid chromatography. J. Chromatogr. A, 1216:8750-8758, 2009.
36. A. Rajendran* and **W. Chen**. Binary retention time method for rapid determination of Langmuir adsorption isotherm parameters. Sep. Purf. Technol., 67:344-354, 2009.
37. M. Kempkes, **E. Darakis**, **T. Khanam**, A. Rajendran*, V. Kariwala, M. Mazzotti, T. Naughton and A. Asundi. Three dimensional digital holographic profiling of micro-fibers. Opt. Express, 17:2938-2943, 2009.
38. A. Rajendran, G. Paredes, and M. Mazzotti*. Simulated moving bed chromatography for the separation of enantiomers. J. Chromatogr. A,1216:709-738, 2009. ***Invited review article for the special issue on 'Editor's choice III'*, * Awarded top cited reviews of 2008- 2009 ***.
39. A. Rajendran*, V. Kariwala and S. Farooq. Correction procedures for extra-column effects in dynamic column breakthrough experiments. Chem. Engg. Sci, 63:2696–2706, 2008.
40. A. Rajendran*, T. Gilkison and M. Mazzotti. Effect of pressure drop on solute retention and column efficiency in supercritical fluid chromatography. 2: Modified carbon dioxide as mobile phase. J. Separ. Sci., 31:1279-1289, 2008.
41. A. Rajendran*. Equilibrium theory based design of simulated moving bed processes under reduced purity requirements: Linear isotherms. J. Chromatogr. A, 1185:216–222, 2008.
42. R. Pini, S. Ottiger, A. Rajendran, G. Storti and M. Mazzotti*. Near-critical adsorption of CO_2 on 13X zeolite and N_2O on silica gel: lack of evidence of critical phenomena. Adsorption, 14:133-141, 2008.

43. S. Guntuka, S. Farooq* and A. Rajendran. A- and B- substituted lanthanum cobaltite perovskite as high temperature oxygen sorbent. 2. Column dynamics study. Ind. Engg. Chem. Res., 47:163-170, 2008.

44. S. Ottiger, J. Kluge, A. Rajendran, and M. Mazzotti*. Enantioseparation of 1-phenyl-1-propanol on cellulose-derived stationary phases by supercritical fluid chromatography 2. Non-Linear isotherm. J. Chromatogr. A, 1162:74-82, 2007.

45. R. Pini, S. Ottiger, A. Rajendran, G. Storti and M. Mazzotti*. Reliable measurement of near critical adsorption by gravimetric method. Adsorption, 12:393-403, 2006.

46. B. Bonavoglia, G. Storti, M. Morbidelli, A. Rajendran and M. Mazzotti*. Sorption and swelling of semicrystalline polymers in supercritical CO_2. J. Polym. Sci., Part B: Polym. Phys., 44:1531-1546, 2006.

47. A. Rajendran, O. Krauchi, M. Mazzotti*, and M. Morbidelli. Effect of pressure drop on solute retention and column efficiency in supercritical fluid chromatography. J. Chromatogr. A, 1092:149–160, 2005.

48. A. Rajendran, S. Peper, M. Johannsen, M. Mazzotti*, M. Morbidelli, and G. Brunner. Enantioseparation of 1-phenyl-1-propanol by Supercritical fluid - simulated moving bed (SF-SMB) Chromatography. J. Chromatogr. A, 1092:55-64, 2005.

49. A. Rajendran, M. Mazzotti*, and M. Morbidelli. Enantioseparation of 1-phenyl-1-propanol on Chiralcel-OD by supercritical fluid chromatography 1. Linear isotherm. J. Chromatogr. A, 1076:183–188, 2005.

50. A. Rajendran, B. Bonavoglia, N. Forrer, G. Storti, M. Mazzotti*, and M. Morbidelli. Simultaneous measurement of swelling and sorption in supercritical CO_2 - Poly(methylmethacrylate) system. Ind. Engg. Chem. Res., 44:2549–2560, 2005. **Listed on the top 20 cited articles published in 2005 by the journal.**

51. T. Hocker, A. Rajendran, and M. Mazzotti*. Measuring and modeling supercritical adsorption in porous solids. Carbon dioxide on 13X zeolite and on silica gel. Langmuir, 19(4):1254–1267, 2003.

52. A. Rajendran, T. Hocker, O. Di Giovanni, and M. Mazzotti*. Experimental observation of critical depletion: Nitrous oxide adsorption on silica gel. Langmuir, 18(25):9726–9734, 2002.

53. G. Biressi, A. Rajendran, M. Mazzotti, and M. Morbidelli*. The GC-SMB separation of the enantiomers of isoflurane. Sep. Sci. Technol., 37(11):2529–2543, 2002.

54. R. Arvind, S. Farooq*, and D. M. Ruthven. Analysis of a piston PSA process for air separation. Chem. Eng. Sci., 57(3):419–433, 2002.

Publications in refereed conference proceedings

1. T. Khanam, E. Darakis, A. Rajendran, V. Kariwala, A. K. Asundi, T. J. Naughton. On-line digital holographic measurement of size and shape of microparticles for crystallization processes, In C. Quan, A. K. Asundi, Proc. SPIE, 7155 (2008) art. 71551K.

2. E. Darakis, T. Khanam, A. Rajendran, V. Kariwala, A. K. Asundi, T. J. Naughton. Processing of digital holograms for size measurements of microparticles, In C. Quan, A. K. Asundi, Proc. SPIE, 7155 (2008) art. 715524.

3. B. Bonavoglia, A. Rajendran, G. Storti, M. Morbidelli and M. Mazzotti. Measurement of sorption and swelling of fluorinated polymers in supercritical CO_2 In G. Kreysa, editor, 8th International workshop on polymer reaction engineering, Hamburg Germany, 2004.

4. A. Rajendran, M. Mazzotti, and M. Morbidelli. Analysis of supercritical fluid chromatography. In C-H. Lee, editor, The 3rd Pacific Basin Conference on Adsorption Science and Technology, Kyongju, Korea, 2003.

5. T. Hocker, A. Rajendran, M. Mazzotti, and M. Morbidelli. Experimental and theoretical investigation of adsorption at high pressures. In A. Bertucco, editor, 4th International Symposium on High Pressure Technology and Chemical Engineering, Venice, Italy, 2002. AIDIC.

6. O. Di Giovanni, T. Hocker, A. Rajendran, W. Doerfler, M. Mazzotti, and M. Morbidelli. Measuring and describing adsorption at supercritical conditions. In K. Kaneko, H. Kanoh, and Y. Hanazawa, editors, 7th International Conference on Fundamentals of Adsorption, Chiba, Japan, 2001. IK International.

Publications in preparation (key results from the following papers have already been presented in conferences)

1. **S. Hosseinzadeh Hejazi, L.Estupinan-Perez, K.N. Pai** and S.M. Kuznicki A. Rajendran*. Single-stage and Dual-stage High-purity Oxygen Production using Silver-Exchanged Titanosilicates (Ag-ETS-10), Ind. Engg. Chem. Res. , in preparation.
2. **K.N. Pai, J. D. Baboolal** D.S. Sharp and A. Rajendran*. Evaluation of di-amine appended MOFs for post-combustion CO_2 capture, Ind. Engg. Chem. Res. , in preparation.
3. **A. Rajagopalan, A. Avila,** and A. Rajendran*. A simulation based study on the impact of Nitrogen adsorption on post-combustion CO_2 capture, Int. J. Greenhouse Gas Cont., in preparation.
4. **R. De Pauw, A. Avila, A. Rajagopalan,** and A. Rajendran*. Batch analogues and improved metrics for rapid screening of adsorbents for post-combustion CO_2 capture, Int. J. Greenhouse Gas Cont., in preparation.
5. **A. Avila, L. Estupinan-Perez,** , J. Sawada, A. Rajendran* and S. Kuznicki. Adsorptive recovery of ethane from residue gas stream using Na-ETS-10, Sepr. Purif. Technol., in preparation.
6. H. Rubiera-Landa, A. Rajendran, A. Seidel-Morgenstern. Discrete Data Isotherms for Multicomponent Adsorption Equilibria & Packed Column Dynamics, Ind. Engg. Chem. Res., in preparation.
7. **P. Karnal**, T. Sainio and A. Rajendran. Design and optimization of bypass-simulated moving chromatography for reduced purity requirements, J. Chromatogr. A, in preparation.

PRESENTATIONS

Invited talks (* indicates presenting authors)

1. A. Rajendran* The curious case of the δ-shock , Northwestern University, Philadelphia, USA, Oct. 2017.
2. S. Jermann, F. Ortner, A. Rajendran* and M. Mazzotti. The curious case of the δ-shock , International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), Philadelphia, USA, Jul. 2015.
3. A. Rajendran*. Process optimization based adsorbent selection & design for post combustion CO_2 capture , Sorptek Workshop organized by Swiss Institute of Material Science (EMPA), IBM Zurich, Sorption Systems, Dubendorf, Switzerland, May 2015.
4. A. Rajendran*. Do (macroscopic) adsorbent properties predict process performance? A process optimization study, Keynote talk at German Society for Chemical Engineering and Biotechnology (DECHEMA) Annual meeting of the Expert committee (Fachgruppe) on Adsorption, Oldenburg, Germany, Feb 2015. **Keynote talk**
5. A. Rajendran*. Post-combustion CO_2 capture by adsorption processes, SINTEF, Oslo, Norway, Feb 2015.
6. A. Rajendran*. Post-combustion CO_2 capture by adsorption processes, Max Planck Institute of Dynamics of complex systems, Magdeburg, Germany, Feb 2015.
7. A. Rajendran*. Post-combustion CO_2 capture by adsorption processes, Department of Petroleum Engineering, Colorado School of Mines, USA, Nov 2014. Declined due to delay in Visa approval
8. A. Rajendran*. Post-combustion CO_2 capture by adsorption processes, Institute of Process Engineering, ETH Zurich, Switzerland, Oct 2014.
9. P. Karnal, A. Rajendran* and T. Sainio. Design and Optimization of Bypass-SMB: An Improved Operation for Reduced Purity Requirements. , International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), Boston, USA, Jul. 2014.

   The PREP meeting is North America's largest forum for large-scale chromatography.
10. A. Rajendran*. Adsorption-based CO_2 capture, Department of Chemistry, University of Tennesse, Knoxville, USA, Sep 2013.
11. Y. Dai, G. Li and A. Rajendran*. Large-volume injections in SFC: Experiments and Theory, International Conference on Supercritical Fluid Chromatography (SFC), Brussels, Belgium, Oct. 2012.

    The conference is the world's largest forum of SFC practitioners.

12. A. Rajendran*. Design and Optimization of preparative supercritical fluid chromatography, Glaxo Smithkline Research Labs, King of Prussia, USA, Jul 2012.
13. J. Siitonen, T. Sainio and A. Rajendran*. Bypass Chromatography: An improved process for reduced purity requirements., International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), Boston, USA, Jul. 2012.
14. Y. Dai, G. Li, K.H. Goh, X. Aristizabal and A. Rajendran*. Experimental Study of Injection Methods in Preparative Supercritical Fluid Chromatography.,, International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), Boston, USA, Jul. 2012.
15. A. Rajendran*, Post-combustion capture of CO_2 by adsorption based processes Department of Earth Sciences, Stanford University, Palo Alto, USA, May 2012.
16. A. Rajendran*. Adsorptive capture of CO_2 from post-combustion flue gas, 14th Asia-Pacific confederation of chemical engineering conference, Singapore, Feb 2012.
17. A. Rajendran*. Injection strategies in SFC, International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), Boston, USA, Jul. 2011.
18. A. Rajendran*. To mix or not to mix - A theoretical study of injection strategies in SFC, International Conference on Supercritical Fluid Chromatography (SFC), Stockholm, Sweden, Sep. 2010.
19. A. Rajendran*. Large scale chromatography using green solvents, ERC International symposium on bioseparations, Inha University, Incheon, Korea, Feb 2009.
20. A. Rajendran*. Optimized chiral separations by supercritical fluid chromatography, Merck Research Labs, Rahway, NJ, USA, Nov 2008.
21. A. Rajendran*. Preparative chiral separations by large-scale chromatography, Orchid Chemicals and Pharmaceuticals, Chennai, India, June 2008.
22. A. Rajendran*. Design of preparative SFC separations, International conference on supercritical fluid chromatography, Sep 2007, Pittsburgh, USA.
23. A. Rajendran*. Preparative chiral separations by large-scale chromatography, Dr. Reddy's laboratories, Hyderabad, India, Dec 2005.

Presentations in conferences (*indicates presenting author, boldface indicates trainee)

1. **A. Rajagopalan, R. De Pauw, A. Avila,** and A. Rajendran*. Batch adsorber analogs for rapid screening of adsorbents for CO_2 capture, AIChE Annual Meeting , San Francisco, USA, Nov 2016.
2. **A. Rajagopalan, A. Avila,** and A. Rajendran*. THe importance of nitrogen co-adsorption on effectiveness of post-combustion CO_2 capture materials. A process optimization study, AIChE Annual Meeting , San Francisco, USA, Nov 2016.
3. **S. Hosseinzadeh Hejazi**, A. Rajendran*, S.M. Kuznicki. High-purity ozygen production using silver exchanged titanosilicates (Ag-ETS-10), AIChE Annual Meeting , San Francisco, USA, Nov 2016.
4. **J. Baboolal,** D.Sharp and A. Rajendran*. Performance of diamine-appended metal organic frameworks exhibiting a S-shaped isotherm for CO_2 capture. A process design and optimization study, FOA 2016 - 12th International Conference on the Fundamentals of Adsorption , Friedrichshafen, Germany, May 2016.
5. **A. Rajagopalan*, A. Avila,** and A. Rajendran. Process optimization based screening and design of adsorbent materials for post-combustion CO_2 capture, FOA 2016 - 12th International Conference on the Fundamentals of Adsorption , Friedrichshafen, Germany, May 2016. **AWARDED POSTER-PRIZE**
6. **A. Avila, A. Rajagopalan*, R. De Pauw** and A. Rajendran, Batch analogues and improved metrics for rapid screening of adsorbents for post-combustion CO_2 capture, FOA 2016 - 12th International Conference on the Fundamentals of Adsorption , Friedrichshafen, Germany, May 2016.
7. **A. Avila, L. Estupinan-Perez,** J. Sawada, A. Rajendran* and S. Kuznicki. Ethane Recovery from Residue Gas Using Pressure Swing Adsorption: Process design, optimization and adsorbent selection, FOA 2016 - 12th International Conference on the Fundamentals of Adsorption , Friedrichshafen, Germany, May 2016.
8. **S. Hosseinzadeh Hejazi***, J. Sawada, S. Kuznicki and A. Rajendran. High purity oxygen separation from air using silver exchanged titanosilicates (Ag-ETS-10), FOA 2016 - 12th International Conference on the Fundamentals of Adsorption , Friedrichshafen, Germany, May 2016.

9. **AK. Rajagopalan*, LE. Perez, A. Avila** and A. Rajendran. Process optimization-based selection of adsorbents for post-combustion CO_2 capture, 65th Canadian Chemical Engineering Conference, Calgary, Canada, Oct 2015.
10. **J. Baboolal*, D. Sharp** and A. Rajendran*. Post combustion CO_2 capture using novel metal-organic framework based solid sorbents: A process optimization study, 65th Canadian Chemical Engineering Conference, Calgary, Canada, Oct 2015.
11. **P. Makhtoumi*, S.A. Hossenizadeh-Hejazi, AK. Rajagopalan** and A. Rajendran. Zero-length column measurement of diffusion of methane and ethane in Na-ETS-10, 65th Canadian Chemical Engineering Conference, Calgary, Canada, Oct 2015.
12. **S.A. Hossenizadeh-Hejazi***, J. Sawada, S. Kuznicki and A. Rajendran. Vacuum swing adsorption process simulation for high purity oxygen separation using silver exchanged titanosilicates, 65th Canadian Chemical Engineering Conference, Calgary, Canada, Oct 2015.
13. **B. Sadri***, A. Rajendran and S. Bhattacharjee. Colloidal deposition and aggregation in the presence of charged collectors. APS DFD 2014, San Francisco, USA Nov 2014.
14. S. Krishnamurthy, **R. Haghpanah**, A. Rajendran and S. Farooq*. A Dual-Adsorbent, Two-Bed VSA Process for CO_2 Capture from Wet Flue Gas, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Atlanta, USA, Nov 2014.
15. **R. Haghpanah**, A. Rajendran and S. Farooq*. Do performance indicators predict adsorption process performance? the case of post-combustion CO_2 capture, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Atlanta, USA, Nov 2014.
16. S.Krishnamurthy, **R. Haghpanah**, J.Baboolal, D.S. Sharp, S. Farooq and A. Rajendran*. The impact of water on post-combustion CO_2 capture by adsorption: a simulation study, 64th Canadian Chemical Engineering Conference, Niagara Falls, Canada, Oct 2014.
17. **S Hosseinzadeh Hejazi ***, A. Rajendran, J. Sawada and S. Kuznicki. High purity oxygen separation from air using silver exchanged titanosilicates, 64th Canadian Chemical Engineering Conference, Niagara Falls, Canada, Oct 2014.
18. H. Rubiera-Landa, A. Rajendran and A. Seidel-Morgenstern*. Discrete data isotherms for multicomponent adsorption equilibria & packed column dynamics, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Basel, Switzerland, Oct. 2014.
19. **P. Karnal**, A. Rajendran* and T.Sainio. Design and optimization of bypass-SMB: An improved process for reduced purity requirements, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Basel, Switzerland, Oct. 2014. **AWARDED BEST-POSTER PRIZE**.
20. A. Rajendran*, **R. Haghpanah**, I. A. Karimi and S. Farooq. Rational sorbent selection for post-combustion carbon capture, Carbon Management Canada (CMC) Annual Meeting, Banff, Canada, May 2014.
21. **R. Haghpanah**, V. Ramarao, S. Krishnamurthy, P. Sharrat, A. Rajendran*, I. A. Karimi and S. Farooq. Process optimization and pilot-scale demonstration of adsorption based post-combustion CO_2 capture, Carbon Management Canada (CMC) Annual Meeting, Banff, Canada, May 2014.
22. **R. Haghpanah**, A. Rajendran*, I. A. Karimi and S. Farooq. Adsorbent selection for post-combustion carbon capture, 63rd Canadian Chemical Engineering Conference, Fredericton, Canada, Oct 2013.
23. **R. Haghpanah**, V. Ramarao, S. Krishnamurthy, P. Sharrat, A. Rajendran*, I. A. Karimi and S. Farooq. Systematic Cycle-synthesis and Pilot Plant Demonstration of a Vacuum Swing Adsorption Process for Post-combustion CO_2 Capture, 63rd Canadian Chemical Engineering Conference, Fredericton, Canada, Oct 2013.
24. R. Vemula, **S. Krishnamurthy**, S.K. Guntuka, A. Rajendran, M. Aman Ullah, P. Sharratt, I. A. Karimi and S. Farooq*. A pilot plant study of a VSA process for CO_2 capture from power plant flue gas, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh USA, Oct 2012.
25. **R. Haghpanah**, **A. Majumder**, **R. Nilam**, A. Rajendran, M. Aman Ullah, I. A. Karimi and S. Farooq*. Optimization of a 4 step PSA cycle for CO_2 capture from post-combustion flue gas, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Pittsburgh USA, Oct 2012. **Adjudged as the best presentation in the session on CO_2 Capture by Adsorption-Process and Storage**

26. **R. Haghpanah**, A. Rajendran* and S. Farooq. Cycle synthesis and optimization of adsorption processes for post combustion CO_2 capture, The 6th Pacific Basic Conference on Adsorption Science and Technology, Taipei Taiwan, May 2012.
27. **R. Haghpanah***, A. Rajendran and S. Farooq. CO_2 capture from post-combustion flue gas on a carbon molecular sieve, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Minneapolis USA, Oct 2011.
28. **R. Haghpanah***, A. Rajendran, S. Farooq, I. A. Karimi and M. Amanullah. Discrete equilibrium data from dynamic column breakthrough experiments, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Minneapolis USA, Oct 2011.
29. J. Siitonen, T. Sainio and A. Rajendran*. Operation Strategies for Chromatographic Separation Processes with Reduced Purity Constraints, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Minneapolis USA, Oct 2011.
30. **T. Khanam**, A. Rajendran*, V. Kariwala and A. Asundi. Online monitoring of crystallization processes using digital holography, 18th international conference on industrial crystallization (ISIC18), Zurich Switzerland, Sep 2011.
31. **W. Chen**, **R. Haghpanah**, A. Rajendran* and M. Amanullah. Rational design of preparative supercritical fluid chromatography, Pacifichem 2010, Hawaii, Dec 2010.
32. **A. Majumder**, V. Kariwala*, S. Ansumali and A. Rajendran. Efficient Solution of Multi-Dimensional Population Balance Equations Using Lattice Boltzmann Method, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City USA, Nov 2010.
33. **T. Khanam**, **N. R. Mohammad**, A. Rajendran, V. Kariwala* and A. K. Asundi. Direct measurement of length and orientation of microfibers in solution, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Salt Lake City USA, Nov 2010.
34. **A. Majumder***, V. Kariwala, S. Ansumali and A. Rajendran. Lattice Boltzmann Method for multidimensional population balance equations, 4th International Conference on Population Balance Modelling, Berlin, Germany, Sep. 2010.
35. **A. Majumder***, V. Kariwala, S. Ansumali and A. Rajendran. Efficient high resolution method with coordinate transformation for multidimensional crystallization processes, 4th International Conference on Population Balance Modelling, Berlin, Germany, Sep. 2010.
36. **W. Chen***, **R. Haghpanah**,A. Rajendran and M. Amanullah. Optimization of isocratic and gradient supercritical fluid chromatographic enantioseparations, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Stockholm, Sweden, Sep. 2010.
37. M. Mazzotti and A. Rajendran*. Experimental and theoretical evidence of a delta-shock in nonlinear chromatography, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Stockholm, Sweden, Sep. 2010.
38. **R. Haghpanah**, A. Rajendran*, M. Amanullah, S. Farooq and I. A. Karimi. Model-independent adsorption isotherms from breakthrough experiments, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Stockholm, Sweden, Sep. 2010.
39. **A. Majumder**, V. Kariwala, S. Ansumali and A. Rajendran*. The Lattice Boltzmann method: An efficient numerical technique for solution of chromatography equations, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Stockholm, Sweden, Sep. 2010.
40. **T. Khanam**, **J. Di**, A. Rajendran*, V. Kariwala and A. K. Asundi. Digital holography: A novel tool for characterization of near-micron sized particles, The 9th international conference on Crystal Growth of Organic Materials , Singapore, Aug 2010.
41. **R. Hagpanah***, A. Rajendran, M. Amanullah, S. Farooq and I. A. Karimi. Model-independent discretized adsorption isotherms from dynamic column breakthrough experiments, 9th International Conference on Fundamentals Of Adsorption, Kobe Japan, May 2010.
42. **A. Majumder**, V. Kariwala and A. Rajendran. Efficient Numerical Simulation of Chromatographic Processes, 9th International Conference on Fundamentals Of Adsorption , Kobe Japan, May 2010.

43. A. Rajendran and M. Mazzotti*. Equilibrium theory of chromatography for the generalized langmuir isotherm: From fundamentals to process design, 9th International Conference on Fundamentals Of Adsorption, Kobe Japan, May 2010.
44. M.F. Hassan, S. Farooq, I. A. Karimi*, M. Amanullah and A. Rajendran. Optimization of a VSA process for CO_2capture and concentration, 9th International Conference on Fundamentals Of Adsorption, Kobe Japan, May 2010.
45. **R. Hagpanah***, A. Rajendran and S. Farooq. Kinetically Controlled CO_2Capture from post-combustion flue gas on a carbon molecular sieve, 9th International Conference on Fundamentals Of Adsorption, Kobe Japan, May 2010.
46. A. Rajendran* and M. Mazzotti, Local equilibrium theory for the binary chromatography of species subject to a generalized Langmuir isotherm: Wave interactions, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Nashville USA, Nov 2009.
47. **W. Chen**, A. Rajendran* and M. Amanullah, Optimization of supercritical fluid chromatography for enantioseparations, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Nashville USA, Nov 2009.
48. **T. Khanam**, **E. Darakis**, A. Rajendran, V. Kariwala* and A.K. Asundi. Two and three dimensional microparticle characterization using digital holography, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Nashville USA, Nov 2009.
49. **A. Majumder**, V. Kariwala* and A. Rajendran. Lattice Boltzmann Method: An efficient technique for solving population balance equations, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Nashville USA, Nov 2009.
50. A. Rajendran*. Equilibrium theory based design of simulated moving bed processes under reduced purity requirements: Linear Isotherms, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Philadelphia USA, Nov 2008.
51. A. Rajendran* and **W. Chen**. Binary retention time for rapid determination of competitive Langmuir isotherm parameters, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Philadelphia USA, Nov 2008.
52. A. Rajendran* and M. Mazzotti, Local equilibrium theory for the binary chromatography of species subject to a generalized Langmuir isotherm: Wave interactions and chromatographic cycle, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Zurich Switzerland, Oct. 2008
53. A. Rajendran*,.Equilibrium Theory Based Design of Simulated Moving Bed Processes under Reduced Purity Requirements: Linear Isotherms, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Zurich Switzerland, Oct. 2008
54. A. Rajendran* and **W. Chen**. Binary retention time for rapid determination of competitive Langmuir isotherm parameters, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Zurich Switzerland, Oct. 2008
55. **W. Chen***, A. Rajendran and M. Amanullah. Optimized preparative supercritical fluid chromatography: Enantioseparation of flurbiprofen, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Zurich Switzerland, Oct. 2008.
56. **W. Chen*** and A. Rajendran. Supercritical fluid chromatography enantioseparation of flurbiprofen: Determination of non-linear isotherms, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Zurich Switzerland, Oct. 2008
57. M. Kempkes*, **E. Darakis**, **T. Khanam**, A. Rajendran, V. Kariwala, M. Mazzotti, A.K. Asundi and T. Naughton. Three dimensional size measurement of needle shaped particles by digital holography, 17th International Symposium on Industrial Crystallization (ISIC), Maastricht Netherlands, Sept 2008
58. **T. Khanam***, **E. Darakis**, A. Rajendran, V. Kariwala, A.K. Asundi and T. Naughton. Online digital holographic measurement of size and shape of microparticles for crystallization processes, 9th International Meeting on Laser Metrology, Singapore, Jun 2008.

59. **E. Darakis***, **T. Khanam**, A. Rajendran, V. Kariwala, A.K. Asundi and T. Naughton. Processing of digital holograms for size measurement of microparticles, 9th International Meeting on Laser Metrology, Singapore, Jun 2008.

60. **W. Chen** and A. Rajendran*. Enantioseparation Of Flurbiprofen By Supercritical Fluid Chromatography, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Salt lake city USA, Nov 2007.

61. A. Rajendran*, S. Farooq and V. Kariwala. Effect Of detector response on dynamic column breakthrough experiments, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Salt lake city USA, Nov 2007.

62. A. Rajendran* and S. Farooq. A high temperature adsorption process for air separation, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Salt lake city USA, Nov 2007.

63. A. Rajendran*, T. Gilkison and M. Mazzotti. Pressure drop effects in supercritical fluid chromatography, 1st International Conference on Supercritical Fluid Chromatography, Pittsburgh USA, Sept 2007

64. **W. Chen** and A. Rajendran*. Optimization of binary separations in supercritical fluid chromatography, 1st International Conference on Supercritical Fluid Chromatography, Pittsburgh USA, Sept 2007

65. **W. Chen**, M. Amanullah and A. Rajendran*. Chiral separation of flurbiprofen by supercritical fluid chromatography, 1st International Conference on Supercritical Fluid Chromatography, Pittsburgh USA, Sept 2007

66. A. Rajendran*, S. Farooq and V. Kariwala. Blank correction in dynamic column breakthrough experiments, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007

67. A. Rajendran*, T. Gilkison and M. Mazzotti. Pressure drop effects in supercritical fluid chromatography, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007

68. **W. Chen** and A. Rajendran*. Chiral separations by preparative supercritical fluid chromatography; Enantioseparation of ibuprofen and flurbiprofen, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007

69. A. Rajendran*, B. Bonavoglia, G. Storti, M. Mazzotti and M. Morbidelli. Measurement of sorption and swelling of supercritical carbon dioxide in polymers, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007

70. S. Ottiger, R. Pini*, A. Rajendran, B., G. Storti, M. Mazzotti and M. Morbidelli. Measurement of near-critical adsorption on different adsorbents by gravimetric method, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007

71. S. Ottiger, J. Kluge, A. Rajendran* and M. Mazzotti. Enantionseparation of 1-phenyl-1-propanol by supercritical fluid chromatography at non-linear conditions, 9th International Conference on Fundamentals Of Adsorption, Sicily Italy, May 2007.

72. S. Ottiger, J. Kluge*, A. Rajendran and M. Mazzotti. Enantionseparation of 1-phenyl-1-propanol by supercritical fluid chromatography: non-linear isotherm, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Innsbruck Austria, Oct. 2006

73. S. Ottiger, R. Pini*, A. Rajendran, G. Storti and M. Mazzotti. Near-critical adsorption of CO_2 on 13X zeolite, activated carbon and coal , 7th International Symposium on the Characterization of Porous Solids, Aix en Provence France, May. 2005

74. S. Ottiger, R. Pini*, A. Rajendran, G. Storti and M. Mazzotti. Study of adsorption of supercritical carbon dioxide on carbon-based adsorbents, International Symposium on Supercritical Fluids (ISSF), Orlando USA, May. 2005.

75. A. Rajendran*, M. Mazzotti and M. Morbidelli. Enantioseparation by supercritical fluid simulated moving bed (SF-SMB) process. Recent advances in separation and purification techniques for biological and pharmaceutical products development., Singapore, Feb 2005.

76. A. Rajendran*, S. Peper, M. Mazzotti, M. Johannsen and M. Morbidelli. supercritical fluid simulated moving bed (SF-SMB) enantioseparation of 1-phenyl-1-propanol, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Aachen Germany, Oct. 2004.

77. A. Rajendran*, J. Kluge, S. Ottiger, M. Mazzotti and M. Morbidelli. Enantionseparation at non-linear conditions in supercritical fluid chromatography, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Aachen Germany, Oct. 2004
78. B. Bonavoglia*, A. Rajendran, G. Storti, M. Morbidelli and M. Mazzotti. Measurement of sorption and swelling of fluorinated polymers in supercritical CO_2 8th International workshop on polymer reaction engineering, Hamburg Germany, Oct. 2004.
79. B. Bonavoglia, A. Rajendran, S. Ottiger, G. Storti, M. Mazzotti* and M. Morbidelli. Study of sorption and swelling of polymers in supercritical CO_2 8th International Conference on Fundamentals Of Adsorption, Sedona USA, May 2004
80. A. Rajendran,M. Mazzotti* and M. Morbidelli. Design of supercritical fluid chromatographic processes. 8th International Conference on Fundamentals Of Adsorption, Sedona USA, May 2004.
81. A. Rajendran, B. Bonavoglia*, N. Forrer, G. Storti and M. Mazzotti. Simultaneous measurement of swelling and sorption of supercritical-CO_2poly(methylmethacrylate). American Inst. of Chemical Engineers (AIChE) Annual Meeting, San Francisco USA, Nov. 2003.
82. A. Rajendran, M. Mazzotti* and M. Morbidelli. Analysis of supercritical fluid chromatography, The 3rd Pacific Basic Conference on Adsorption Science and Technology, Kyongju Korea, May 2003
83. A. Rajendran*, M. Mazzotti and M. Morbidelli. Analysis of supercritical fluid chromatography, International Symposium on Preparative and Industrial Chromatography and Allied techniques (SPICA), Heidelberg Germany, Oct. 2002.
84. T. Hocker*, A. Rajendran, M. Mazzotti and M. Morbidelli. Experimental and theoretical study of supercritical adsorption in porous sorbents near bulk critical conditions. Fourth International Symposium on Effects of Surface Heterogeneity in Adsorption and Catalysis on Solids (ISSHAC IV), Cracow Poland, August 2001.
85. O. Di Giovanni, T. Hocker, A. Rajendran, W- Doerfler, M. Mazzotti* and M. Morbidelli. Measuring and describing adsorption at supercritical conditions, 7th International Conference on Fundamentals Of Adsorption, Chiba Japan, May 2001.
86. T. Hocker, A. Rajendran, M. Mazzotti* and M. Morbidelli. Measuring and describing adsorption at supercritical conditions, American Inst. of Chemical Engineers (AIChE) Annual Meeting, Reno USA, Nov. 2001.
87. R. Arvind*, S. Farooq, and D. M. Ruthven. Analysis of a piston driven PSA process. American Inst. of Chemical Engineers (AIChE) Annual Meeting, Los Angeles USA, Nov. 2000.

TEACHING

Courses developed and taught

- Molecular Sieves Separation Technology (graduate)
- Chemical Process Analysis (undergraduate)
- Unit Operations/Equilibrium staged separations (undergraduate).
- Introduction to Chemical and Biomedical Industries (undergraduate).
- Unit Operations Laboratory (undergraduate).
- Chemical Engineering Plant Design (undergraduate).

Teaching effectiveness

- Consistent high ($>$ 90%) teaching index based on student feedback.
- University-level teaching awards.
- Taught large ($>$250) and small ($<$20) classes.

SERVICE

Details of service to the scientific community

- Leadership in professional bodies:
  - Elected board member, International adsorption society, 2016-2022.
- Service as key organizer of conferences:
  - Technical chair for the Canadian Society of Chemical Engineering (CSChE) Annual meeting, 2017, Edmonton, Canada.

    The CSChE meeting is the most important meeting for the Chemical Engineering community in Canada. The technical chair is responsible for the technical content of the conference handling ¿ 700 abstracts. This includes selection of plenary lectures, session topics, papers, scheduling and eventual organization. The meeting typically attracts $\approx$ 1200 participants.
  - Main organizer of the 5th Pacific Basin conference on Adsorption Science and Technology, May 2009, Singapore.

    This is one of the key gatherings of adsorption scientists. The meeting in Singapore attracted 90 scientists from Asia, Americas, Europe and Australia. As the chief organizer my responsibilities included fund raising, selection of papers, editing of a special edition of Adsorption-The journal of the international adsorption society, coordination and scheduling of technical and social programs.
- Service as reviewer for international conferences
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2016, Vienna, Austria.
  - 12th International Conference on the Fundamentals of Adsorption, 2016, Lake Constanz, Germany.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2014, Basel, Switzerland.
  - 11th International Conference on the Fundamentals of Adsorption, 2013, Baltimore, USA.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2012, Brussels, Belgium.
  - Asia Pacific Confederation of Chemical Engineering Congress, APCChE 2012, Singapore.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2010, Stockholm, Sweden.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Oct 2008, Zurich, Switzerland.
  - 9th International Conference on the Fundamentals of Adsorption, 2007, Sicily, Italy.
- Service as member of organizing/scientific committee of international conferences
  - 12th International conference on the fundamentals of adsorption (FOA12) 2016, Friederichshafen, Germany.
  - Permanent member of the scientific committee, Symposium on Preparative and Industrial Chromatography (SPICA) series, 2011- 2016.
  - 11th International conference on the fundamentals of adsorption , FOA11 2013, Baltimore, USA.
  - Asia Pacific Confederation of Chemical Engineering Congress, APCChE 2012, Singapore.
  - 11th International symposium on process systems engineering, PSE 2012, Singapore.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2010, Stockholm, Sweden.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2008, Zurich, Switzerland.
  - International conference on Supercritical Fluid Chromatography, Sep 2007, Pittsburgh, USA.
  - Regional Symposium on Chemical Engineering, Dec 2006, Singapore.
  - Recent advances in separation processes for pharmaceutical and biological product development, Feb 2005, Singapore.
- Service as session chairman/co-chairman at international conferences:
  - 12th International conference on the fundamentals of adsorption (FOA12) 2016, Friderichshafen, Germany.
  - Canadian Society of Chemical Engineering Annual Meeting, Oct 2015, Calgary, Canada.
  - International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), 2015, Philadelphia, USA.
  - Canadian Society of Chemical Engineering Annual Meeting, Oct 2014, Niagara Falls, Canada.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Oct 2014, Basel, Switzerland.
  - International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), 2014, Boston, USA.
  - International conference on packed column supercritical fluid chromatography, Oct 2012, Brussels, Belgium.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Oct 2012, Brussels, Belgium.
  - International Symposium, Exhibit and workshops on preparative and process chromatography (PREP), 2012, Boston, USA.
  - American Institute of Chemical Engineers Annual Meeting, 2011, Minneapolis, USA.
  - International Chemical Congress of Pacific Basin Societies, Pacifichem 2010, Hawaii, USA.
  - International conference on packed column supercritical fluid chromatography, Sep 2010, Stockholm,

Sweden.
  - Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2010, Stockholm, Sweden.
  - 9th International workshop on crystal growth of organic materials, Aug 2010, Singapore.
  - American Institute of Chemical Engineers Annual Meeting, 2009, Nashville, USA.
  - 9th International Conference on the Fundamentals of Adsorption, 2007, Sicily, Italy.
  - Regional Symposium on Chemical Engineering, Dec 2006, Singapore.
  - Recent advances in separation processes for pharmaceutical and biological product development, Feb 2005, Singapore.
- Service as reviewer for international journals
  - Adsorption, AIChE Journal, Atomization and Sprays, Brazilian Journal of Chemical Engineering, Chemical Engineering Science (**Outstanding reviewer**), Computers and Chemical Engineering, Food and Bioproducts Processing, Industrial and Engineering Chemistry Research, Journal of Chromatography A (**Outstanding reviewer**), Journal of Process Control, Journal of Separation Science, Journal of Supercritical Fluids, Powder Technology, Separation Science and Technology, Separation and Purification Technology.
- Service as reviewer for PhD thesis:
  - Bharatidasan University (India)
  - Indian Institute of Technology, Chennai (India)
  - Indian Institute of Technology, Guwahati (India)
  - Swiss Federal Institute of Technology, Zurich (Switzerland)
  - University of Melbourne, Melbourne (Australia)
  - Karstad University, Karlstad (Sweden)
  - National Institute of Technology, Calicut (India)
  - University of Queensland, Brisbane (Australia)
  - Indian Institute of Technology, Mumbai (India)
- Organization of workshops:
  - Workshop on "Multicolumn Processes: from Historical SMB to the Latest Advances in the Purification of Biomolecules", Symposium on Preparative and Industrial Chromatography (SPICA), Oct 2016, Vienna, Austria.
  - Workshop on "Adsorption Processes", 12th International conference on Fundamentals of Adsorption (FOA12), May 2016, Lake Konstanz, Germany.
  - Workshop on "Multicolumn Processes: from Historical SMB to the Latest Advances in the Purification of Biomolecules", Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2014, Basel, Switzerland.
  - Workshop on "Multicolumn Processes: from Historical SMB to the Latest Advances in the Purification of Biomolecules", Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2012, Brussels, Belgium.
  - Workshop on "Supercritical fluid chromatography", Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2010, Stockholm, Sweden.
  - Workshop on "Toolbox to understand Simulated Moving Beds", Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2004, Aachen, Germany.
  - Workshop on "Toolbox to understand Simulated Moving Beds", Symposium on Preparative and Industrial Chromatography (SPICA), Sep 2008, Zurich, Switzerland.

Details of service to department/faculty (University of Alberta)

- Member, Engineering Librarian recruitment committee, 2017.
- Member, Faculty recruitment committee, Reaction Engineering, 2017
- Member, Mechanical engineering chair selection committee, 2016.
- Member, Faculty recruitment committee, William Magee Chair in Process Design, 2016.
- Member, Undergraduate curriculum revision committee Apr 2013 -2015.
- Member, DB Robinson speaker series selection committee 2013-2015.
- Member, Faculty Evaluation Committee (FEC), Year 2014.

  The FEC is responsible for decisions regarding award of tenure, promotions and evaluates the performance of $\approx$ 250 faculty members in the Faculty of Engineering, University of Alberta.
- Member, Faculty recruitment committee, Computational science and engineering, 2013.

Service to the university (Nanyang Technological University)

- Reviewer, Sub-Committee for the Discipline Cluster: EP1- Chemical Sciences and Chemical Engineering, NTU Research council , Dec 2011-2012
  - Reviewing grant submissions for university fund allocation.
  - Screening grant submissions from university for Ministry of Education grant calls.
- Hall Fellow for Hall of Residence 1 from July 2006 till Aug 2012.
  - Mentored 6 batches of student leaders.
  - Mentored students in times of distress.
  - Assisted international students and freshmen to integrate within the hall.
- Outreach activities
  - Delivered promotional talks for NTU Undergraduate programs at schools and for junior college students at several events.
  - Contributing a lecture on "Climate Change Mitigation" for the see-NTU program organized by the Office of Admissions and Financial Aid.
  - Served as a judge for Singapore Science Fairs, 2009, 2010, 2011, 2012- a nationwide competition for promoting science among high school students.
  - Supervised high school students as a part of the Nanyang research program.

Service to the department (Nanyang Technological University)

- Chairman, Faculty search committee committee, Dec 2011-2012. Coordinated multiple faculty searches within the department
- Chairman, School (faculty) reappointment committee, Dec 2011-2012. Coordinated the evaluation and recommendations for multiple applications for re-appointments
- Coordinator of third year lab development committee, 2006- 2012.
  - Successfully developed laboratory course manual and training.
  - Coordinated purchase of laboratory equipment.
  - Coordinated with Sulzer Chemtech for sponsorship of life-sized model of a distillation column currently installed in the school.
- Coordinator of admissions and outreach committee, 2005- 2006
  - Coordinated the design of undergraduate brochures.
  - Successfully coordinated admission exercises for AY 2005/06, AY 2006/2007, including organizing outreach talks, arranging open house events and attending admission meetings.
  - Delivered several undergraduate recruitment talks to junior college students during the admission campaigns.
- Coordinator of library committee, 2006- 2012
  - Coordinated the acquisition of books for the library.
  - Organized workshops on accessing information and the use of bibliographic tools for graduate students.
- Coordination of prizes and placements
  - Successfully coordinated the institution of S$30,000 endowment prize from Pfizer Asia Pacific.
  - Initiated industrial attachment programs with Sulzer Chemtech, KBC Advanced technologies, Environmental Resource Management (ERM), etc. These companies have trained several of our students and recruited them as employees.

Personal particulars

Age	41 years
Marital status	Married with one daughter
Citizenship	Indian Citizen, Canadian and Singaporean Permanent Resident

Last Updated : January 25, 2018