

Agus Pulung SASMITO, Ph.D

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Website : <http://sites.google.com/site/apsasmito>
Publications : 2 books, 6 book chapters, 22 journals,
3 keynotes, 19 conferences
H-index : 4 (ISI Web of Science)



Educational Background

- **Ph.D.** Division of Energy and Bio-Thermal System, Mechanical Engineering Department, National University of Singapore, 2006-2011. Supervisor: Prof. Arun S. Mujumdar, Co-supervisor: Asst. Prof. Erik Birgersson; research project: *Modeling of Transport Phenomena in Polymer Electrolyte Fuel Cell Stacks: Thermal, Water, and Gas Management*; scholarship awarded from NUS Research Scholarship and AUN/SEED-Net.
- **B.Eng. (Hons).** Engineering Physics Department, Gadjah Mada University, Indonesia, 2001-2005. Academic advisor: Dr.-Ing. Kusnanto, thesis supervisor: Dr.-Ing. Sihana and Drs. Ir. Masjhuri, MM; thesis: *Improved Design for Non-Condensable Gas Removal System in Dieng Geothermal Power Plant: Ejector and Liquid Ring Vacuum Pump*.

Research Interest

- New and renewable energy technology
- Heat and mass transfer
- Electrochemistry
- Underground mines

Teaching Interest

- Heat and mass transfer
- Fluid mechanics
- Thermodynamics

Publications:

Books:

1. **A.P. Sasmito** and A.S. Mujumdar, Transport Phenomena Models for Polymer Electrolyte Fuel Cell Stacks: Thermal, Water and Gas Management - From Fundamentals to Applications, *Lambert Academic Publishing*, Germany, 2011, ISBN: 978-3-8443-9063-6.
2. **A.P. Sasmito**, J.C. Kurnia, S.V. Jangam, Mathematical Modeling of Transport Processes, *TPR Group*, Singapore, 2011, ISBN: 978-981-08-9179-4.

Book chapters:

1. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Computational study of thermal, water and gas management in PEM fuel cell stacks, book chapter in: *Hydrogen Energy*, edited by Dragica Minic, *Intech Publisher*, Croatia, 2012, ISBN 980-953-307-277-2. (Invitation)
2. **A.P. Sasmito**, M. Guan, E. Birgersson, A.S. Mujumdar, Computational Fluid Dynamics Analysis of Total Air-Conditioning in Underground Mines, book chapter in: *Engineering Application of Computational Fluid Dynamics – Volume 2*, edited by M.A.R.S. Al-Baghdadi, *International Energy and Environment Foundation*, 2012. (Invitation)
3. **A.P. Sasmito**, S.A. Khan, A.S. Mujumdar, Nanofluids Heat Transfer: Preparation, Characterization and Theoretical Aspects, book chapter in: *Nanofluids: Research, Development and Applications*, edited by Y. Zhang, *Nova Science Publishers, Inc.*, Hauppauge, NY, 2012, submitted. (Invitation)
4. J.C. Kurnia, **A.P. Sasmito**, W. Tong, A.S. Mujumdar, Conjugate Model for Drying of Thin Slabs Using Impinging Jets, book chapter in: *Drying of Foods, Vegetables and Fruits - Volume 3*, edited by S.V. Jangam, C.L. Law and A.S. Mujumdar, *TPR Group*, Singapore, 2011, ISBN: 978-981-08-9426-9.
5. **A.P. Sasmito** and A.S. Mujumdar, Mass Transport in a Micro-Channel T-Junction with Coiled-Base Channel Design, Lecture notes in: *Selected Topics in Heat and Mass Transport*, *TPR group*, Singapore, 2011.
6. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Mathematical Modeling of PEM Fuel Cell Stacks: Thermal Management, book chapter in: *Mathematical Modeling of Industrial Transport Processes*, edited by P. Xu, Z. Wu and A. S. Mujumdar, *TPR group*, Singapore, 2009, ISBN: 978-981-08-6269-5.

Invited Speaker:

1. **A.P. Sasmito**, Research and Development in Underground Mines: The Role of Mathematical Modeling to Improve Safety, Productivity, Economical and Environmental Aspect, *Mine Managers Show Asia 2011*, Bali, Indonesia, 2011.
2. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Thermal, Water and Gas Management in PEM Fuel Cell – A Modeling Approach, *4th Sriwijaya International Seminar on Energy Science and Technology (SISEST)*, Palembang, Indonesia, 2011.
3. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Fuel Cell Research and Development Using ANSYS FLUENT – From Fundamentals to Applications, *8th ASEAN ANSYS Conference*, Singapore, 2010.

Journal papers:

1. **A.P. Sasmito**, E. Birgersson, H. Ly, A.S. Mujumdar, Some Approaches to Improve Ventilation System in Underground Coal Mines Environment - A Computational Fluid Dynamic Study, submitted to *Tunnelling and Underground Space Technology*, 2011. (under review)
2. **A.P. Sasmito**, J.C. Kurnia, A.S. Mujumdar, Evaluation of Various Gas and Coolant Channel Designs for High Performance Liquid-Cooled Proton Exchange Membrane Fuel Cell Stacks, submitted to *Journal of Power Sources*, 2011. (under review)
3. H. An, A. Li, **A.P. Sasmito**, J.C. Kurnia, S.V. Jangam, A.S. Mujumdar, Computational Fluid Dynamics (CFD) Analysis of Microreactors Performance: Effect of Geometric Configurations, submitted to *Chemical Engineering Science*, 2011. (under review)

4. J.C. Kurnia, **A.P. Sasmito**, S.V. Jangam, A.S. Mujumdar, Improved Design for Heat Transfer Performance of a Novel Phase Change Material (PCM) Thermal Energy Storage (TES), submitted to *Applied Thermal Engineering*, 2011. (under review)
5. J.C. Kurnia, **A.P. Sasmito**, S.V. Jangam, A.S. Mujumdar, Heat transfer in coiled square tubes for laminar flow of a slurry of microencapsulated phase change material (MEPCM), submitted to *Heat Transfer Engineering*, 2011. (under review)
6. A.V. Arasu, **A.P. Sasmito**, A.S. Mujumdar, Thermal Performance Enhancement of Paraffin Wax with Al₂O₃ and CuO Nanoparticles – A Numerical Study, submitted to *Frontier in Heat and Mass Transfer*, 2011. (under review)
7. A.V. Arasu, **A.P. Sasmito**, A.S. Mujumdar, Numerical Study of Performance of Paraffin Wax Dispersed with Alumina in a Concentric Pipe Latent Heat Storage System, submitted to *Thermal Science*, 2011. (under review)
8. **A.P. Sasmito**, E. Birgersson, K.W. Lum, A.S. Mujumdar, Computational Study of Free Air-Breathing PEM Fuel Cell: Single Cell and Stack, submitted to *ASEAN Engineering Journal*, 2011. (under review)
9. M. Shaker, H. Ghaedamini, **A.P. Sasmito**, J.C. Kurnia, S.V. Jangam, A.S. Mujumdar, Numerical Investigation of Laminar Mass Transport Enhancement in Heterogeneous Gaseous Microreactors, *Chemical Engineering Processing: Process Intensification*, 2011, accepted with revision. (Cited: 0 times; IF: 1.729)
10. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, A Novel Flow Reversal Concept for Improved Thermal Management in Polymer Electrolyte Fuel Cell Stacks, *International Journal of Thermal Sciences*, 2011, in press, DOI:10.1016/j.ijthermalsci.2011.11.020. (Cited: 0 times; IF: 1.667)
11. **A.P. Sasmito**, J.C. Kurnia, A.S. Mujumdar, Numerical evaluation of transport phenomena in a T-junction micro-reactor with coils of different configurations, *Industrial & Engineering Chemistry Research*, 2011, in press, DOI:10.1021/ie200139. (Cited: 0 times; IF: 2.071)
12. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Laminar convective heat transfer for in-plane spiral coils of non-circular cross sections ducts: A computational fluid dynamics study, *Thermal Science*, 2011, in press, DOI:10.2298/TSCI100627014K. (Cited: 2 times; IF: 0.706)
13. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Numerical Evaluation of Various Thermal Management Strategies for Polymer Electrolyte Fuel Cell Stacks, *International Journal of Hydrogen Energy*, Vol 36 (20), 12991-13007, 2011. (Cited: 0 times; IF: 4.053)
14. **A.P. Sasmito**, E. Birgersson, K.W. Lum, A.S. Mujumdar, Fan selection and stack design for open-cathode polymer electrolyte fuel cell stacks, *Renewable Energy*, Vol 37 (1), 325-332, 2012. (Cited: 1 times; IF: 2.554)
15. **A.P. Sasmito** and A.S. Mujumdar, Performance Evaluation of a Polymer Electrolyte Fuel Cell with a Dead-End Anode: A Computational Fluid Dynamic Study, *International Journal of Hydrogen Energy*, Vol 36 (17), 10917-10933, 2011. (Cited: 0 times; IF: 4.053)
16. **A.P. Sasmito**, J.C. Kurnia, A.S. Mujumdar, Numerical Evaluation of Laminar Heat Transfer Enhancement in Nanofluid Flow in Coiled Square Tubes, *Nanoscale Research Letters*, 2011, Vol 6: 376. (Cited: 2 times; IF: 2.557)
17. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Numerical Investigation of Laminar Heat Transfer Performance of Various Cooling Channel Designs, *Applied Thermal Engineering*, 2011, Vol 31 (6-7): 1293-1304. (Cited: 9 times; IF: 1.823)
18. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Evaluation of Heat Transfer Performance of Helical Coils of Non-circular Tubes, *Journal of Zhejiang University Science: A*, 2011, Vol 12 (1): 63-70. (Cited: 4 times; IF: 0.332)
19. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Numerical Investigation of Liquid Water Cooling for a Proton Exchange Membrane Fuel Cell Stack, *Heat Transfer Engineering*, 2011, Vol 32 (2): 151-167. (Cited: 8 times; IF: 0.932)

20. **A.P. Sasmito**, K.W. Lum, E. Birgersson, A.S. Mujumdar, Computational Study of Forced-Air Convection in an Open-Cathode Polymer Electrolyte Fuel Cells Stack, *Journal of Power Sources*, 2010, Vol 195 (17): 5550-5563. (Cited: 9 times; IF: 4.283)
21. H. Ly, E. Birgersson, M. Vynnycky, **A.P. Sasmito**, Validated Reduction and Accelerated Numerical Computation of a Model for the Proton Exchange Membrane Fuel Cell, *Journal of the Electrochemical Society*, 2009, Vol 156 (10): B1156-B1168. (Cited: 6 times, IF: 2.420)
22. Peng Xu, Z.H. Wu, S.M.A. Rahman, **A.P. Sasmito**, J.C. Kurnia, P.H. Joo and K.E. Birgersson, Report on Honorary Doctorate for Editor-in-Chief Professor Arun S. Mujumdar Receives Doctor Honoris Causa Award from Lodz Technical University, Poland on June 11, 2008, *Drying Technology*, Vol 26, 1618-1622, 2008. (Cited: 0 times, IF: 1.662)

Conference papers:

1. **A.P. Sasmito**, E. Birgersson, H. Ly, A.S. Mujumdar, Improved Design of Total Air Conditioning System in Underground Coal Mines, *14th US/North American Mine Ventilation Symposium 2012*, Salt Lake City, Utah, 2012. (accepted)
2. **A.P. Sasmito**, J.C. Kurnia, E. Birgersson, A.S. Mujumdar, Numerical Evaluation of Performance of Oblique-Fin Channel for PEM Fuel Cell Stacks Relatives to Conventional Channels, *3rd International Conference on Fuel Cell and Hydrogen Technology 2011*, Kuala Lumpur, Malaysia, 2011.
3. **A.P. Sasmito**, E. Birgersson, H. Ly, A.S. Mujumdar, Design of Underground Coal Mines Ventilation System in a Rapid Mining Development Region – A Computational Fluid Dynamic Study, *4th Sriwijaya International Seminar on Energy Science and Technology (SISEST)*, Palembang, Indonesia, 2011.
4. **A.P. Sasmito**, E. Birgersson, H. Ly, K.W. Lum, A.S. Mujumdar, Improved Total Air-conditioning System in Underground Coal Mines–A Computational Study, *22nd World Mining Congress and EXPO*, Istanbul, Turkey, 2011.
5. **A.P. Sasmito**, J.C. Kurnia, S.V. Jangam, A.S. Mujumdar, Improved Design for Heat Transfer Performance of a Novel Phase Change Material (PCM) Thermal Energy Storage (TES), *4th Sriwijaya International Seminar on Energy Science and Technology (SISEST)*, Palembang, Indonesia, 2011.
6. J.C. Kurnia, **A.P. Sasmito**, S.V. Jangam, A.S. Mujumdar, Model for Drying of Thin Slabs Using Pulsed Impinging Jets, *7th Asia-Pacific Drying Conference*, Tianjin, China, 2011.
7. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Computational Study of Flow Reversal for Improved Thermal Management in a PEMFC Stack With Forced Air Convection Cooling, *14th ASME International Heat Transfer Conference (14th IHTC)*, Washington DC, USA, p. 22787, pp 81-90, 2010.
8. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Computational Study of Energy-Efficient Thermal Drying Using Intermittent Impinging Jets, *8th ASEAN ANSYS Conference*, Singapore, 2010.
9. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Numerical Evaluation of Heat Transfer Performance of Helical Coils of Non-circular Tubes, *International Symposium on Innovative Materials for Processes in Energy Systems (IMPRES)*, Singapore, 2010.
10. J.C. Kurnia, **A.P. Sasmito**, A.S. Mujumdar, Convective Heat Transfer in Coils of Non-circular Cross-sections: CFD Study of Laminar Heat Transfer Enhancement Relative to Straight Pipes, *3rd Sriwijaya International Seminar on Energy Science and Technology (SISEST)*, Palembang, Indonesia, 2010.
11. **A.P. Sasmito**, E. Birgersson, K.W. Lum, A.S. Mujumdar, Numerical Study of Natural Convection Air Cooling of a Polymer Electrolyte Fuel Cell: Single Cell and

- Stack, *Regional Conference on Mechanical and Aerospace Technology*, p. 114, Bali, Indonesia, 2010.
12. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Transient Analysis of a PEFC with a Dead-End Anode, *216th Electrochemical Society Meeting 2009*, p. B1-320, Vienna, Austria, 2009.
 13. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Analysis of Various Cooling Strategies for a PEFC stack, *216th Electrochemical Society Meeting 2009*, p. B1-321, Vienna, Austria, 2009.
 14. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Fuel Cell Stack: Thermal Management, *Workshop on Mathematical Modeling on Minerals, Metals, and Materials Processing*, Singapore, 2009.
 15. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Framework for Modelling and Design of PEMFC Stacks with FLUENT, *7th ASEAN ANSYS Conference*, Singapore, 2008.
 16. K.W. Lum, E. Birgersson, **A.P. Sasmito**, H.J. Poh, A.S. Mujumdar, Numerical Study of Forced Air Convection for Polymer Electrolyte Fuel Cell Stacks, *213th Electrochemical Society Meeting 2008*, p. B8-486, Phoenix Arizona, United States of America, 2008.
 17. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Numerical Investigation of PEMFC Stack Cooling, *6th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT 2008)*, p. SA4, Pretoria, South Africa, 2008.
 18. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Implementation and Validation of a CFD Model for PEMFC with a Net-Type Flow Field, *6th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT 2008)*, p. SA3, Pretoria, South Africa, 2008.
 19. **A.P. Sasmito**, E. Birgersson, A.S. Mujumdar, Quantitative Comparison On the Effect of Net-Type Flow Gas Distributor on PEMFC Performance, *10th AUN/SEED-Net Field Wise Seminar on Mechanical Engineering - New and Renewable Energy*, Bandung, Indonesia, 2007.

Work experiences:

- *Research Fellow* in Minerals Metals and Materials Technology Centre (M3TC), Department of Chemical and Biomolecular Engineering, National University of Singapore, Project: Mathematical Multi-Scale Framework for Total Air-Conditioning in Mines, October 2010 – present.
- *Research scholar*, Division of Energy and Bio-Thermal System, Department of Mechanical Engineering, National University of Singapore, August 2006 – August 2010.

Research experiences:

- *Modeling of transport phenomena in polymer electrolyte fuel cell stacks:*
 - **Fundamental research:** model development (two-phase model comprising conservation of mass, momentum, energy, species, charge, phenomenological membrane model and agglomerate catalyst layer mode); model verification, calibration and validation against experimental counterpart in term of global polarization curve, local current density and temperature distributions.
 - **Applied research:** thermal management (modeling of various thermal management strategies in PEFC stack, e.g. liquid, forced air-convection, edge-air, and natural convection-air cooling); water and gas management (transient analysis of PEFC with a dead-end anode and purging effect to the cell performance).
- *Modeling and design of underground coal mines:*
 - Model development and validation of underground coal mining ventilation.
 - Thermal management in underground mines.

- Dust and methane control in underground coal mining
- *Phase change materials:*
 - Model development of phase change material for thermal energy storage and electronic cooling
 - Improved design of phase change material for solar thermal energy storage.
 - Nano phase change materials for improved heat transfer performance.
- *Micro-mixer and micro-reactor:*
 - Model development and validation of mixing processes and chemical reactions in micro channel reactor
 - Heat and mass transport enhancement in T-junction micro-reactor
- *Heat transfer enhancement using nanofluids and micro-encapsulated phase change materials*
 - Model development of various nanofluid for heat transfer enhancement: single phase, Euler-Lagrange, Euler-Euler and mixture model.
 - Nano-fluid heat transfer in coiled-base channel.
 - Model development for MEPCM suspension for heat transfer enhancement
- *Mathematical modeling of drying:*
 - Conjugate model for drying in porous media.
 - Effect of pulsation and intermittent inlet on drying of heat sensitive materials.
- *Impinging jet heat and mass transfer:*
 - Mathematical modeling of jet impingement for improved heat and mass transfer in drying.
 - Effect of pulsating and intermittent flow in impinging jet heat transfer: laminar and turbulent.
- *Heat transfer:*
 - Heat transfer in straight, coiled and helical duct in various shape and size: laminar, turbulent, various Re and Pr number, newtonian, non-newtonian fluid and nano-fluid for compact heat exchanger.
 - Modeling of heat transfer performance in coiled tubes.
- *Geothermal energy (in collaboration with PT. Geodipa Energy, Indonesia):*
 - Energy analysis in geothermal power plant. Improved design for non-condensable gas removal system in geothermal power plant.
 - CFD simulation of nozzle design for a low pressure geothermal turbine.

Teaching experiences:

1. Guest lecture in *Mass Transport* (ME6203), **Ph.D. course**, Mechanical Engineering Department, National University of Singapore, 2011.
2. Teaching assistance in *Power Generation and Optimization* (TKF3421), **B.Eng specialization course**, Engineering Physics Department, Gadjah Mada University, 2004.

Thesis Supervisions:

1. **Guan Mengzhao**, Prediction and Innovative Control Strategies for Underground Mine Ventilation - A Computational Approach, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2011-2012, in progress.
2. **Wang Weijie**, Evaluation of Performance of Some Novel Designs of Coils as Heat Exchanger, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2011-2012, in progress.
3. **Ong Zhao Fu Amos**, Design of Solar Thermal Energy Storage in a Phase Change Materials, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2010-2011.

4. **Lee Cheow Beng Kenny**, Modeling and design of coal mines, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2010-2011.
5. **Seah Kah Wei**, Study of Forced-air convection in PEFC stacks, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2009-2010.
6. **Swaminathan Kannapan**, Development of a Fuel Cell Model in Fluent, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2008-2009.
7. **Tri Gunadi Widjaja**, High Performance Computing of Two-Phase Flow in a Fuel Cell, *Undergraduate thesis*, Department of Mechanical Engineering, National University of Singapore, 2008-2009.
8. **Kiara Ä. Kochendörfer**, Numerical study of PEMFC with a dead-end anode, *Diploma thesis*, Department of Chemical Engineering, Technische Universität Berlin, 2007-2008.
9. **Low Pei Shan Selina**, Numerical study of free-air breathing PEMFC, *Undergraduate thesis*, Department of Chemical and Bio-molecular Engineering, National University of Singapore, 2007-2008.
10. **Chung Pak Wing**, Numerical study of PEMFC stack design: parallel and series, *Undergraduate thesis*, Department of Electrical and Computer Engineering, National University of Singapore, 2007-2008.

Awards

- Two papers are selected as *Key Scientific Article* featured in *Renewable Energy Global Innovations*.
- Selected as member of American Chemical Society (ACS) 2011.
- Ph.D. scholarship in ME NUS from NUS research scholarship and AUN/SEED-Net
- Master of Engineering scholarship in ME NUS from AUN/SEED-Net.
- Top 10 percent student in Engineering Physics Department UGM.

Professional service as peer-reviewer in journals:

- Advanced Science Letters (1, w/ Prof. A.S. Mujumdar)
- Applied Energy (4)
- Applied Thermal Engineering (2, w/ Prof. A.S. Mujumdar and J.C. Kurnia)
- AIChE Journal (1, w/ Prof. A.S. Mujumdar and J.C. Kurnia)
- Brazilian Journal of Chemical Engineering (1, w/ Prof. A.S. Mujumdar)
- Chemical Engineering Research and Design (1, w/ Prof. A.S. Mujumdar)
- Chemical Engineering Processing (1, w/ Prof. A.S. Mujumdar)
- Chemical Engineering & Technology (1, w/ Prof. A.S. Mujumdar)
- Current Nanoscience (1, w/ Prof. A.S. Mujumdar)
- Energy (1, w/ Prof. A.S. Mujumdar)
- Energy Conversion & Management (2, w/ Prof. A.S. Mujumdar)
- Heat Transfer Engineering (1, w/ Prof. A.S. Mujumdar)
- International Journal of Heat and Mass Transfer (3, w/ Prof. A.S. Mujumdar)
- International Journal of Thermal Sciences (20, w/ Prof. A.S. Mujumdar)
- Industrial & Engineering Chemistry Research (3, w/ Prof. A.S. Mujumdar)
- Journal of Heat Transfer –T ASME (1, w/ Prof. A.S. Mujumdar)
- Journal of Zhejiang University Science A (2, w/ Prof. A.S. Mujumdar)
- Korean Journal of Chemical Engineering (1, w/ Prof. A.S. Mujumdar)
- Langmuir (1, w/ Prof. A.S. Mujumdar)
- Nanoscale Research Letters (3, w/ Prof. A.S. Mujumdar and J.C. Kurnia)

Curriculum Vitae

- Nanoscience and Nanotechnology Letters (1, w/ Prof. A.S. Mujumdar)
- Physics Letters A (1, w/ Prof. A.S. Mujumdar)
- Thermal Science (3)
- Zeitschrift fur Naturforschung A (1, w/ Prof. A.S. Mujumdar)

Software skills:

- Gambit, Fluent + UDS + UDF's, C/C++ (expert)
- Comsol multiphysics, Matlab, Fortran, Tecplot (advanced)
- Office, LaTeX, Visio (expert)

Professional membership:

- Member of American Chemical Society (ACS)
- Student member of Electro-Chemical Society (ECS)
- Member of Transport Processes Research (TPR)

Referees:

- **Prof. Arun S. Mujumdar:** Professor in Mechanical Engineering Department and Director of Minerals Metals and Materials Technology Centre (M3TC), National University of Singapore, Editor-in-Chief of Drying Technology - An International Journal published by Taylor & Francis.
 - Email : mpeasm@nus.edu.sg
 - Website : <http://serve.me.nus.edu.sg/aron/>
- **Dr. Erik Birgersson:** Assistant Professor in Department of Chemical and Bio-Molecular Engineering and Associate in Engineering Science Programme, National University of Singapore.
 - Email : chebke@nus.edu.sg
 - Website : http://www.chee.nus.edu.sg/people/faculty_birgersson.html
- **Dr.-Ing. Sihana:** Senior Lecturer and Head of Department of Engineering Physics, Gadjah Mada University, Indonesia.
 - Email : sihana@ugm.ac.id
 - Website : <http://sihana.staff.ugm.ac.id/>