



Majid Ahmadlouydarab

PhD & PDF

Chemical & Petroleum Engineering

Associate Professor

Faculty of Chemical & Petroleum Engineering

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Summary:

- ◆ **Associate Professor** of Chemical Engineering at University of Tabriz.
- ◆ **CEO** of **INTEL** (Innovative Technologies Laboratory).
- ◆ **Eight years** of teaching and research experience in “**North America**”.
- ◆ **Three years** served as a fulltime faculty member at Sahand U of Tech.
- ◆ **Three years** served as manager of the Talented Students Office at Sahand U of Tech.
- ◆ **50+ Published papers** in peer reviewed journals such as:
 - **Journal of Fluid Mechanics,**
 - **Applied Thermal Engineering,**
 - **Langmuir,**
 - **Physical Review E,**
 - **Physica A,**
 - **Physica Scripta,**
 - **European Journal of Mechanics/B,**
 - **International Journal of Multiphase Flows,**
 - **Renewable Energy,**
 - **Journal of the Taiwan Institute of Chemical Engineers**
 - **Chemical Engineering Research and Design**
 - **Advanced Powder Technology,**
 - **Journal of Environmental Chemical Engineering,**
 - **Journal of Thermal Analysis and Calorimetry...**
- ◆ **50+ Presented papers** in international and national conferences.
- ◆ **100+ Reviewed papers** for peer reviewed journals.
- ◆ Selected as **Outstanding reviewer**, AUT Journal of Mechanical Engineering in 2020.
- ◆ Participated in university level teaching workshops in USA; Developing Teaching Strategies (**DTS**), and Improving Teaching by Assessing (**ITA**).
- ◆ Participated in university level teaching workshops in Canada; Teaching in Canadian Classrooms (**TCA**), and Instructional Skills workshop (**ISW**).
- ◆ Conducted original experimental and theoretical researches to address scientific and/or industrial challenges and opportunities.
- ◆ Expert in commercial engineering software e.g., Ansys-Fluent, Hysys, Matlab, C++, FORTRAN.



Education/Training:

Chemical Engineering (PDF)

Water and Energy Laboratory, University of California, USA

Projects: Interfacial flows, pores-scale flows, microfluidics

May 2015- Aug 2016

Chemical Engineering (PDF)

Reservoir Simulation Group, CCIT, Calgary, Canada

Projects: Hot fluid injection, water flooding, steam injection

Aug 2013- Apr 2015

Chemical Engineering (PhD)

Complex Flows Laboratory, University of British Columbia, Canada

Dissertation: "Numerical simulation of interfacial flows in micropores"

Sep 2009- Jun 2013

Chemical Engineering (MSc)

Flow Simulation Laboratory, Sharif University of Technology, Iran

Thesis: "Simulation of 3D blood flow in coronary arteries"

Sep 2001- Apr 2004

Chemical Engineering (BSc)

Process Design Laboratory, Sahand University of Technology, Iran

Thesis: "Design and build of a lab-scale CO₂ absorption packed bed tower"

Sep 1997- Sep 2001

Awards:

- Dr. Kazemi Ashtiani Award, 2017, Iran
- Postdoctoral Fellowship Award, 2015 to 2017, University of California, USA
- Postdoctoral Fellowship Award, 2013 to 2015, University of Calgary, Canada
- 2nd place among 17 participants in best problem based TA selection, 2013, UBC, Canada
- Graduate Entrance Scholarship, 2009, UBC, Canada
- Partial Tuition Fee Scholarship, 2009 to 2013 UBC, Canada
- Research Assistantship, 2009 to 2013 UBC, Canada

Committee member:

- Scientific Committee Member of First National Conference of Optimizing in Renewable Energies, 2020. <http://ore2020.jsu.ac.ir/fa/page.php?rid=46>

Honors:

- 1st place among 54 groups participated in 1st TPEC (Tondgooyan Petroleum Engineering Competition), Iran, 2023.
- Winner of 12 awards and scholarships for PhD study, Canada, 2009 to 2014.
- 2nd place among the graduated BSc chemical engineering students, Iran, 2001.
- 15th place among 2437 participants in national MSc entrance exam, Iran, 2001.

Recent certificates:

- **Developing Teaching Strategies**, (2016, U of California, USA)
- **Improving Teaching by Assessing**, (2016, U of California, USA)
- **Instructional Skills Workshop**, (2010, UBC, Canada)
- **Trained in WHIMIS**, (2009, UBC, Canada)
- **Teaching in Canadian Classrooms**, (2013, U of Calgary, Canada)
- **Introduction to CMG's Modelling Workflows**, (2014, CMG company, Canada)
- **Introduction to Thermal EOR Simulation**, (2015, CMG company, Canada)
- **SAGD Simulation Using STARS**, (2015, CMG company, Canada)



Teaching experience:

- Transport Phenomena in Porous Media
- Computational Fluid Dynamics
- Advanced Numerical Analysis
- Advanced Mathematics Applications in Chemical Engineering
- Calculations of Refining Engineering
- Petroleum Refining Processes
- Fluid Mechanics
- Thermodynamics
- Unit operation
- Mass transfer

Work and Professional Experiences:

- 1- Associate Professor** since April 2022
Faculty of Chemical and Petroleum Engineering, University of Tabriz, Iran
- 2- Assistant Professor** June 2017-April 2022
Faculty of Chemical and Petroleum Engineering, University of Tabriz, Iran
- 3- Software instructor** Sept 2017-Sept 2020
Tehran Institute of Technology, Iran
- 4- Lecturer** May 2016- Aug 2016
School of Engineering, University of California, Merced, USA
- 5- Postdoctoral Fellow** May 2015- Sep 2016
Water and Energy Laboratory, SE, University of California, Merced, USA
- 6- Postdoctoral Fellow** Aug 2013- May 2015
Reservoir Simulation Group, CCIT, University of Calgary, Canada
- 7- Graduate Research Assistant** July 2009- June 2013
Multiphase Flow Simulation Laboratory, University of British Columbia, Canada
- 8- Graduate Teaching Assistant** July 2009- June 2013
Chemical & Biological Engineering Department, University of British Columbia, Canada
- 9- Faculty member as a Full Time Lecturer** Sep 2006- July 2009
Mechanical Engineering Department, Sahand University of Technology, Iran

Research interests:

- Multiphase flows
- Transport phenomena
- Energy storage
- Nanofluids application
- Simulation & modeling

Membership:

- Member of Iran National Elites Foundation (عضو بنیاد ملی نخبگان)
- American Physical Society - Division of Fluid dynamics (APS-DFD),
- Iranian Chemical Engineering Society,



Reviewer/Referee for Journals:

- Physical Review E,
- Langmuir,
- Journal of Petroleum Science & Engineering,
- Journal of Thermal Science and Engineering Applications,
- International Journal of Refrigeration,
- International Journal of Heat and Mass Transfer,
- Ain Shams Engineering Journal,
- Journal of Porous Media,
- Entropy,
- Arabian Journal of Science and Engineering,
- Microsystem Technologies,
- AUT Journal of Mechanical Engineering,
- Journal of Energy Management and Technology (JEMT),
- Journal of Mechanical Engineering University of Tabriz (JMEU),

Journal papers (published):

- 1- "A Novel Process for Styrene Monomer Production with CO₂ Utilization and Membrane Process", ***Arabian Journal for Science and Engineering***, (2024), DOI: 10.1007/s13369-024-09059-6.
- 2- "Impact of cationic surfactant-coated hydrophilic nanoparticles on polymeric solution performance in chemical enhanced oil recovery (CEOR) from a two-dimensional porous medium" ***Chemical Engineering Research and Design***, (2024), DOI: 10.1016/j.cherd.2024.03.003.
- 3- "Effect of Temperature on Enhanced Oil Recovery from a Two-Dimensional Porous Medium when Injecting Polyacrylamide Polymer Solution", ***Iranian Chemical Engineering Journal***, 22, 130 (2024), 118-128.
- 4- "Simulation of flared gases combustion inside a double-wall thermal chimney using computational fluid dynamics", ***Iranian Journal of Chemistry and Chemical Engineering*** (2023), DOI: 10.30492/IJCCE.2023.2011475.6218.
- 5- "Evaluation of Thermal Stability of TiO₂ Applied on the Surface of a Ceramic Tile to Eliminate Methylene Blue Using Silica-based Doping Materials", ***Advanced Journal of Chemistry-Section A***, 6(4), (2023), 352-365.
- 6- "Effects of temperature and nanofluid type on the oil recovery from a vertical porous media in antigravity fluid injection", ***Chemical Engineering Research and Design***, (2023), DOI:10.1016/j.cherd.2023.03.046.
- 7- "Experimental study of thermal stability of TiO₂ in presence of dopants and silica as a catalyst support at high temperatures", ***Nashrieh Shimi va Mohandesi Shimi Iran***, 42 (2), (2023), 133-143, 4Article_249214.
- 8- "A Precise Mathematical Correlation to Estimate Product Yield of Delayed Coking Units", ***Journal of Chemical and Petroleum Engineering***, 57(1), (2023), 189- 202.
- 9- "Effects of heat–light source on the thermal efficiency of flat plate solar collector when nanofluid is used as service fluid", ***Journal of Thermal Analysis and Calorimetry***, (2023), DOI: 10.1007/s10973-023-12181-6
- 10- "Thermal efficiency of flat plate solar collector with TiO₂-based nanofluid: synergistic effect of size and facet orientation", ***Physica Scripta***, 98 (2023) 045915.



- 11- "Effects of hot nanofluid injection on oil recovery from a model porous medium", **Chemical Engineering Research and Design** 186 (2022) 451–461.
- 12- "Experimental study on cylindrical and flat plate solar collectors' thermal efficiency comparison" **Renewable Energy** 190 (2022) 848-864.
- 13- "Epoxy resin matrix integrating epoxy-polydimethylsiloxane based self-healing microcapsules: Healing efficiency, mechanical and thermal stability", **Polymer Engineering and Science**, 62 (7) (2022) 2302-2311.
- 14- "Left atrial appendage shape impacts on the left atrial flow hemodynamics: A numerical hypothesis generating study on two cases", **Computer Methods and Programs in Biomedicine**, 213 (2022) 106506.
- 15- "Excellent electromagnetic wave absorption by complex systems through hybrid polymerized material" *Polymer Bulletin*, **Polymer Bulletin**, 79 (2022) 955-970.
- 16- "Experimental Study on Viscose Fingering Instability in Radial Displacing of Carboxymethyl Cellulose Solution by Paraffin in Hele-Shaw Cell", **Journal of the Taiwan Institute of Chemical Engineers**, 127 (2021) 46-55.
- 17- "Capabilities of α -Al₂O₃, γ -Al₂O₃, and bentonite dry powders used in flat plate solar collector for thermal energy storage", **Renewable Energy** 173 (2021) 704-720.
- 18- "Effects of phase change on enhanced oil recovery during injection of steam carrying alumina nanoparticles: Numerical simulation", **Arabian Journal for Science and Engineering**, (2021) doi.org/10.1007/s13369-021-05738-w.
- 19- "Towards convective heat transfer optimization in aluminum tube automotive radiators: Potential assessment of novel Fe₂O₃-TiO₂/water hybrid nanofluid", **Journal of the Taiwan Institute of Chemical Engineers**, 124 (2021) 424-436.
- 20- "Effects of the wettability gradient of the flow structure inside a sessile droplet carrying a hydrophobic microparticle on solid substrate", **Nashrieh Shimi va Mohandesi Shimi Iran**, (2021).
- 21- "Nanoparticles enhanced phase change materials (NePCMs)-A recent review", **Applied Thermal Engineering**, 176 (2020) 115305.
- 22- "Compatibilization of immiscible polymer blends (R-PET/PP) by adding PP-g-MA as compatibilizer: analysis of phase morphology and mechanical properties", **Polymer Bulletin**, 77 (2020) 5753-5766.
- 23- "Effects of utilizing nanofluid as working fluid in a lab-scale designed FPSC to improve thermal absorption and efficiency", **Physica A Journal**, 540 (2020) 123109.
- 24- "Effect of Wetting and Dewetting on the Dynamics of Atomic Force Microscopy Measurements", **Langmuir**, 35 (41) (2019) 13301-13310.
- 25- "Application of Lab-Scale MBBR to Treat Industrial Wastewater using K3 Carriers: Effects of HRT, High COD Influent, and Temperature", **International Journal of Environmental Sciences & Natural Resources**, 2 (2) (2019) 556031.
- 26- "Application of phosphorescent material in activation of N:Cu:TiO₂ photocatalyst as antibacterial and dye removal agent from solid surfaces used in hospitals", **Journal of Environmental Chemical Engineering**, 7 (2019) 102956.



- 27- "Application of oak powder/Fe₃O₄ magnetic composite in toxic metals removal from aqueous solutions" ***Advanced Powder Technology***, 30 (2019) 544–554.
- 28- "Condensate Retention as a function of condensate flow rate on horizontal enhanced PIN-FIN Tubes", ***Thermal Science***, 23 (2019) 3887-3892.
- 29- "Studying the physicochemical characteristics and metals adsorptive behavior of CMC-g-HAp/Fe₃O₄ nanobiocomposite", ***Journal of Environmental Chemical Engineering***, 6 (2018) 6049–6058
- 30- "Six stages of microdroplet detachment from microscaled fibres", ***Langmuir***, 34 (1) (2018) 198-204.
- 31- "An experimental study of enhanced heat sinks for thermal management using n-eicosane as phase change material", ***Applied Thermal Engineering***, (2018) 132, 52–66.
- 32- "Coalescence of sessile microdroplets subject to a wettability gradient on a solid surface", ***Physical Review E***, 94 (2016) 033112.
- 33- "Dynamics of liquid bridges inside microchannels subject to external pulsatile flow ", ***European Journal of Mechanics B/Fluids***, 57 (2016) 129–142.
- 34- "Immiscible flow displacements with phase change in radial injection ", ***International Journal of Multiphase flows***, 72 (2015) 73-82.
- 35- "Dynamics of viscous liquid bridges inside microchannels subject to external oscillatory flow ", ***Physical Review E***, 91 (2015) 023002.
- 36- "Motion and coalescence of sessile drops driven by substrate wetting gradient and external flow", ***Journal of Fluid Mechanics***, 746 (2014) 214- 235.
- 37- "Relative permeability for two-phase flow through corrugated tubes as model porous media", ***International Journal of Multiphase flows***, 47 (2012) 85-93.
- 38- "Interfacial flows in corrugated micro-channels: flow regimes, transitions and hysteresis", ***International Journal of Multiphase flows***, 37 (2011) 1266-1276.
- 39- "CFD approach for the moisture prediction in spray chamber for drying of salt solution", ***Journal of Industrial and Engineering Chemistry***, 17 (3) (2011) 527-532.
- 40- "Effect of coronary-coronary bypass geometrical configuration on blood flow parameters in end-to-side and side-to-end anastomoses regions", ***Iranian Journal of Chemistry and Chemical Engineering (IJCCE)***, 3 (29) (2010) 101-109.
- 41- "Simulation of three-dimensional pulsatile blood flow in aorta-coronary bypass", ***Iranian Journal of Biomedical Engineering***, 4 (1) (2010) 65-72.
- 42- "A Numerical Study of Pulmonary Gas Exchange System to Assess a Proper Relationship between Respiration Rhythm and Individual's Activity Rate", ***Iranian Journal of Biomedical Engineering***, 2 (1) (2008) 39-46.
- 43- "Blood flow simulation and comparing of hemodynamic factors in aorta-coronary and coronary-coronary bypasses", ***Iranian Journal of Biomedical Engineering***, 1 (2) (2007) 111-118.
- 44- "Design, make and startup of a multipurpose absorbing packed bed tower in laboratory scale", ***Iranian Journal of Chemical Engineering***, 24 (2006) 75-81.



Selected conference papers:

- 1- "Dynamics of liquid bridges inside microchannels subject to pure oscillatory flows", 67th annual APS-DFD meeting, San Francisco, CA, USA, Nov. 2014.
- 2- "Phase Change Effects on Immiscible Flow Displacements in Radial Injection", 67th annual APS-DFD meeting, San Francisco, CA, USA, Nov. 2014.
- 3- "Motion and coalescence of sessile drops driven by substrate wetting gradient and external flow", 65th annual APS-DFD meeting, San Diego, CA, USA, Nov. 2012.
- 4- "Interfacial flows in micro-channels: Flow regimes, transitions & hysteresis", ICIAM, Vancouver, BC. July, 2011.
- 5- "Interfacial flows in micro-channels", CANCAM, Vancouver, BC. June, 2011.
- 6- "Interfacial flows in micro-channels: Flow regimes, transitions", 63rd annual APS-DFD meeting, Long beach, CA, USA, Nov. 2010.
- 7- "A numerical study to assess a proper relationship between respiration rhythm and athletes activities ", Paper Code: BM-104, 4th Cairo International Biomedical Engineering Conference 2008 (CIBEC'08).
- 8- "CFD simulation and PIV measurement of dual rushton impeller stirred tank reactor", ACOMEN 2008, Liège, Belgium, May 2008.
- 9- "Design and fluid flow analysis of helix heat exchangers", Paper code: 01211, pp. 366-374, The 5th International Chem. Eng. Congress (IChEC 2008), Kish Island, Iran, Jan. 2008.
- 10- "CFD simulation of power and mixing time for rushton turbine in a baffled-tank reactor", Paper code: 01182, pp. 292-301, The 5th International Chem. Eng. Congress (IChEC 2008), Kish Island, Iran, Jan. 2008.
- 11- "Effects of nozzle diameter, flow rates and jet angle on mixing time in a jet mixer", Paper code: 01224, pp. 433-442, The 5th International Chem. Eng. Congress (IChEC 2008), Kish Island, Iran, Jan. 2008.
- 12- "The study of oxygen diffusivity effects on oxygen uptake in pulmonary capillaries", Paper Code: ICBME0062, ICBME2008, Mashhad, Iran, Dec. 2008.
- 13- "Simulation of Blood Treatment Flow in Artificial Kidney", Paper Code: ICBME0062, ICBME2008, Mashhad, Iran, Dec. 2008.
- 14- "Effects of the stenosis percent and graft angle on the temporal shear stress gradients in the aorto-coronary bypass", Paper code: 01183, Abstract pp. 37, IChEC11, Tehran - Iran, Nov. 2006.
- 15- "Effects of variable stenosis percents and bypass graft angles on the temporal shear stress gradients in the aorto-coronary bypass", Paper code: CF14_586, pp. 7113 – 7128, IChEC10, Zahedan - Iran, Dec. 2005.
- 16- "Effects of different stenosis percents and graft angles on blood flow field in coronary – coronary bypass", Paper code: TP116, pp. 33 - 44, IChEC9, Tehran - Iran, Nov. 2004.
- 17- "Simulation of three dimensional pulsatile blood flow in aorta-coronary bypass", Paper code: 305, ICBME 2004, pp. 72, Tehran - Iran, Feb. 2004.
- 18- "Comparing of aorta-coronary bypass and coronary-coronary bypass blood flow fields", Paper code: 315, ICBME 2004, pp. 73, Tehran –Iran, Feb. 2004.

