

Prof. Rahbar Rahimi

Rahbar Rahimi is a chemical engineering university professor with more than 40 years of research and teaching experience. His passion lies within CO₂ Emission and Renewable Energy. His main Research experience is hydrogen & fuel cells with the focus of lightweight and efficient battery design. He started his career as a mechanical engineer, followed by a chemistry degree and proceeded as a chemical engineer. He has initiated 2 laboratories in fuel cells and unit operations and has taught fundamental courses including advanced mass transfer and process unit operations. All this has led to successful graduation of 62 master students and 10 Ph.Ds.



Contact Address

Professor in Chemical Engineering
(retired)
University Boulevard, Faculty of
Engineering, Zahedan, Iran.
Telephone: +98 5431132450
Mobile: +989151419052
e-mail: [rrahimi\[at\]eng.usb.ac.ir](mailto:rrahimi[at]eng.usb.ac.ir)

<https://www.usb.ac.ir/eng>
<https://www.usb.ac.ir>
<https://scholar.google.com/citations?hl=en&user=Ci5ICygAAAAJ>

Current Position/Affiliations

- | | |
|------------|--|
| Since 2014 | • Member of the Academy of Sciences of Iran-Chemical Engineering Division. |
| Since 2010 | • Full Professor in Chemical Engineering, University of Sistan and Baluchestan, IRAN |
| Since 2010 | • Member of Iranian Association of Gas Engineering /Iran Gas Institute (IGI). |
| Since 2000 | • Member of Iranian Association of Chemical Engineering (IACHE). |

Education

- | | |
|-------------|---|
| Since 1988 | • Ph. D. degree in Chemical Engineering, University of Bath, England. |
| 1976 - 1977 | • M.Sc. In Process Analysis and Development. Aston University, England. |
| 1975 - 1976 | • Post Graduate Diploma in Chemical Engineering, Aston University, England. |
| 1970 - 1974 | • B.Sc. degree in Chemistry, Ferdousi University, Iran. |
| 1969 - 1970 | • College Diploma in Mechanical Engineering, Technology Institute of Mashhad, Iran. |

Research Interests

- Hydrogen Fuel Cells
- Direct Methanol Fuel Cells
- Renewable Energy
- CO₂ Absorption in air lift bioreactors
- Computational Fluid Dynamics in Distillation Trays Design
- Heat transfer in Process Units
- Distillation Column Design

Citations and Other Statistics

- Scopus Citation Index: Citations: 411 h-index ۲۰
- Google Scholar: Citations: 906 h-index ۲۳

Patents

December 9th, 2012
February 19th, 2015
August 24th, 2016

Conical Cap Tray, Registration No.7845
Bipolar Plate, Registration No.86937
Sieve Tray For DWC, Registration No.92336

Ten Most Important Publications

- 2021** "New design and optimization of an industrial three-phase boot separator using the coupled CFD-RSM models", Z Khalifat, M Zivdar, **R Rahimi**, Brazilian Journal of Chemical Engineering., DOI: [10.1007/s43153-021-00158-7](https://doi.org/10.1007/s43153-021-00158-7)
- 2020 "Effect of superficial gas velocity on CO₂ capture from air by Chlorella vulgaris microalgae in an Airlift photo bioreactor with external sparger.", Negar Azhanda, Aziz Sadeghizadeha, **R Rahimi**, Journal of Environmental Chemical Engineering, 2020. DOI: [10.1016/j.jece.2020.104022](https://doi.org/10.1016/j.jece.2020.104022).
- 2020 "Experimental and numerical investigating a new configured thermal coupling between metal hydride tank and PEM fuel cell using heat pipe", Farshid Mahmoodi, **R Rahimi**., Applied Thermal Engineering., 2020. DOI: [10.1016/j.applthermaleng.2020.115490](https://doi.org/10.1016/j.applthermaleng.2020.115490).
- 2019 "CFD Modeling to Predict Mass Transfer in Multicomponent Mixtures.", MS Lavasani, **R Rahimi**, M Zivdar, M Kalbassi. Chemical Product and Process Modeling, 2019. DOI: [10.1515/cppm-2019-0079](https://doi.org/10.1515/cppm-2019-0079).
- 2018 "New design and optimization for replacing dimethyl disulfide with wasted disulfide oil in olefin furnaces.", E Ziarifar, **R Rahimi**, M Zivdar. Energy & fuels 32 (11), 11375-11382, 2018. DOI: [10.1021/acs.energyfuels.8b02773](https://doi.org/10.1021/acs.energyfuels.8b02773).
- 2018 "Numerical investigation of methanol crossover through the membrane in a direct methanol fuel cell.", S Sharifi, **R Rahimi**, D Mohebbi-Kalhor, Cano Colpan. Iranian Journal of Hydrogen & Fuel Cell 5 (1), 21-33, 2018. DOI: [10.22104/IJHFC.2018.2867.1170](https://doi.org/10.22104/IJHFC.2018.2867.1170).
- 2018 "Hydrodynamic study of different configurations of sieve trays for a dividing wall column by using experimental and CFD methods.", MS Lavasani, **R Rahimi**, M Zivdar. Chemical Engineering and Processing-Process Intensification 129, 162-170, 2018. DOI: [10.1016/j.cep.2018.05.008](https://doi.org/10.1016/j.cep.2018.05.008).
- 2018 "Computational fluid dynamics modeling of carbon dioxide capture from air using biocatalyst in an airlift reactor.", A Sadeghizadeh, **R Rahimi**, F. Farhad Dad. Bio resource technology 253, 154-164, 2018. DOI: [10.1016/j.biortech.2018.01.025](https://doi.org/10.1016/j.biortech.2018.01.025).
- 2017 "CFD Simulation of Dry and Wet Pressure Drops and Flow Pattern in Catalytic Structured Pickings.", M Mazarei Sotoodeh, M Zivdar, **R Rahimi**. Journal of Chemical and Petroleum Engineering 51 (1), 27-37, 2017. DOI: [10.22059/JCHPE.2017.62163](https://doi.org/10.22059/JCHPE.2017.62163).
- 2017 "Computational fluid dynamics on the hydrodynamic characteristics of the conical cap tray.", T Zarei, E Abedini, **R Rahimi**, J Khorshidi. Korean Journal of Chemical Engineering 34 (4), 969-976, 2017. DOI: <https://doi.org/10.1007/s11814-017-0004-6>.
- 2017 "Experimental Studies on the Conical Cap tray Performance.", T Zarei, J Khorshidi, R Rahimi, A Zarei. Journal of Chemical and Petroleum Engineering 50 (2), 47-52, 2017. DOI: [10.22059/JCHPE.2017.60504](https://doi.org/10.22059/JCHPE.2017.60504).
- 2017 "CO₂ capture from air by Chlorella Vulgaris microalgae in an airlift photo bioreactor". Aziz Sadeghizadeh, **Rahbar Rahimi**, Farid Farhad Dad, Leila Moghaddasi. Bio resource Technology 243, 441-447, 2017. <https://doi.org/10.1016/j.biortech.2017.06.147>.

- 2015 "Hydrodynamics of sieve tray distillation column using CFD simulation." Mozghan Movahedi Parizi, **R Rahimi**. Journal of Chemical and Petroleum Engineering 49, 119-129, 2015. DOI: [10.22059/jchpe.2015.1805](https://doi.org/10.22059/jchpe.2015.1805).

Selected Research Projects and Grants

- 2021 "Production of Bioethanol from stems and leaves of banana trees of Sistan and Baluchestan Province of Iran Grant by National Elite Foundation, Ahmadi Roshan Project 5th period.
- 2020 "Production of Bioethanol from date wastes of Sistan and Baluchestan Province of Iran". Grant by National Elite Foundation, Ahmadi Roshan Project 4th period.
- 2018 "Computational Fluid Dynamic Simulation and Construction of a pilot-scale trayed Divided Wall Column", Iran National Science Foundation.
- 2006 "Study On Design of Mica Powder Process", University of Sistan and Baluchestan
- 2003 "Study on the design of Unit Operation Lab Steam Utility Piping.", University of Sistan and Baluchestan.
- 2002 "Simulation of Essential Oil Extractor: Research fellow.", University of Sistan and Baluchestan and Kashan University.

Services to the Profession

Pedagogical Merits

- Multicomponent Mass Transfer(Ph.D. level 3 credits)
- Advanced Mass Transfer(MSc level 3 credits)
- Advanced Process Separation(MSc level 3 Credits)
- Mass Transfer(BSc level 3 credits)
- Process Unit Operation(BSc level 3 credits)
- Perspective course research and innovation

Sabbaticals

- 1999 - 2000 "The Application of CFD in Chemical Engineering, CFD Simulation of Sieve Tray Design ", Department of Chemical and Material Engineering, University of Alberta, Canada.

Research Supervision Projects

A. Supervised **62 MSc.** research projects.

B. Main Adviser in the following **Ph. D.** Projects:

- 2020 • Water Desalination.(not continued due to retirement,2022)
- 2019 • Effect of Replacing DMDS with DSO in a pilot to produce hydrogen sulfide in Amir Kabir Petrochemical of Iran.
- 2019 • Mathematical Modeling and Development of Direct Methanol Fuel Cell with Water Management.
- 2019 • Experimental study and CFD modeling of hydrodynamic and mass transfer of a divided wall column.

- 2016 • Lightweight Fuel Cells Design.
- 2014 • Hydrogen Storage Using MH for Fuel Cells.
- 2014 • Simulation, Modeling, and Construction of Divided Wall Column.
- 2009 • Hydrodynamics of Gas-Solid Fluidized Bed by CFD.
- 2007 • Analysis of Sensitive Effective Parameters in CFD Simulation of Two-Phase Bubble Column.
- 2007 • CFD simulation of hydrodynamics, heat and mass transfer of sieve tray distillation columns, with the aim of efficiency determination.
- 2000 • Investigation And Modeling Froth Flotation Characteristics in Sarcheshmeh Copper plant Using Image Analysis and Neural Networks.

Editorship

- Since 2014 Journal of Gas Technology (JGT), ISBN: 2588-5596.
- Since 2009 Journal of Chemical and Petroleum Engineering (JCHPE), ISBN: 2423-673X.
- Since 2008 Iranian Journal of Chemical Engineering (IJChE), ISBN: 1735-5397.

Advisory Boards/Executive Committees

- Since 2014 **Invited Scholar.** The Academy of Sciences of Iran-Chemical Engineering Division.
- Since 2012 **Group Founder.** Iranian Association of Hydrogen and Fuel Cell.
- 2011 - 2013 **Member of Board of Directors.** Iranian Gas Association.
- 2005 - 2010 **Vice-President** of the Iranian Association of Chemical Engineers. (IACHE).
- 2005 - 2015 **Member of Board of Directors.** Iranian Association of Chemical Engineers. (IACHE)
- Since 2007 **Group Founder.** Iranian Gas Association.

Department and University Service

- Since 2014 **Head** of Fuel Cell Research Laboratory, Chemical Engineering Department, University of Sistan and Baluchestan.
- Since 1989 **Head** of Unit Operations Laboratory, Chemical Engineering Department, University of Sistan and Baluchestan.
- Since 2014 **Board Member,** University of Sistan and Baluchestan
- 2005 - 2006 **Deputy Dean** for Research and Technology, Ministry of Science, Research and Technology, IRAN
- 2001 - 2005 **Vice President** for Research and Technology, University of Sistan and Baluchestan.
- 1989 - 1999 **Deputy Dean** for Graduate Studies, University of Sistan and Baluchestan
- 1988 - 1989 **Deputy Dean** for Research and Technology, University of Sistan and Baluchestan.
- 1983 - 1984 **Dean** for Faculty of Engineering, University of Sistan and Baluchestan.

1980 - 1983 **Head** of Chemical Engineering Department, Faculty of Engineering, University of Sistan and Baluchestan

Conference/Workshop Organization

2005 - 2017 **Program chair** for CFD sections of 10th to 17th National IACHE congress.

2013 - 2016 **Program chair** for CFD sections of 3rd and 4th International IACHE congress

Referee for the following Journals

On-demand Chemical Engineering Science; Canadian J. Chemical Engineering

On-demand Chemical Engineering Processing; Iranian J. Chemical Engineering

Referee/Scientific Program Committee for the following Conferences

2005 - 2017 **Referee** in Transport Phenomena Committee, National Iranian Chemical Engineering Conferences of IACHE

2013 - 2016 **Scientific Program Committee** for CFD Section, International Iranian Chemical Engineering Conferences of IACHE

Books/Volumes

- "Easy Mass Transfer", R. Rahimi, University of Sistan and Baluchestan, book press No. 80, 2013. (in Persian).
- "Introduction to Mathematical Modeling of DMFC" R. Rahimi and T. Yazdanipour, University of Sistan and Baluchestan, book press No.42, 2010. (in Persian).
- "Mass Transfer : Fundamentals and Application", Anthony L. Hines and Robert N. Maddox, Prentice Hall, 1985, Chapters 1 to 6 translated to Persian.