

Dr. Abdullah Irankhah



Education:

Tarbiat Modarres University

PhD, Chemical Engineering (Catalyst and Reactor)

MS, Chemical Engineering – Process Design

Ferdowsy University of Mashhad

B.S., Chemical Engineering – Gas Industries

Awards and Honors:

1. 3rd rank in the 21th “**Khwarizmi International Award (KIA)**” and receiving appreciation letter from president in 2007
2. Member of Iranian National Elites Foundation and receiving the institute’s scientific gift
3. Member of Iran Science Association of Elites
4. Honorary member of “Iran Association of Chemical Engineering”
5. 1st rank in Tarbiat Modarres university’ entrance exam for PhD studies in 2001.
6. 1st rank in 6th Iranian Chem-e-car competitions, 2011.
7. 3rd rank in 7th Iranian Chem-e-car competitions, 2012.
8. 2nd rank in 8th Iranian Chem-e-car competitions, 2013.
9. 3rd rank in 9th Iranian Chem-e-car competitions, 2014.
10. 3rd rank in 10th Iranian Chem-e-car competitions, 2015.
11. 1st rank (The Most Creative Design) in WCCE10 Chem-E-Car Competition, October 15, 2017, Barcelona, Spain.

Publications:

❖ Books

1. “Hydrogen and Fuel Cell Technology, Theory and Application”, published in Jan 2009
2. “Hydrogen and Fuel Cell Technology, Priorities and Strategies of Progress in the Country”, published in Jan 2009
3. “Hydrogen and Fuel Cell Technology, Roadmap and Action Plans in the Country”, published in Jan 2009.

❖ Papers

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| 1 | Effect of MgO/Al ₂ O ₃ ratio in the support of mesoporous Ni/MgO–Al ₂ O ₃ catalysts for CO ₂ utilization via reverse water gas shift reaction A Ranjbar, SF Aghamiri, A Irankhah International Journal of Hydrogen Energy 48 (50), 19115-19125 | 2023 |
| 2 | Evaluation of Co-Fe, Cu-Fe, Ni-Al and Ni-Fe mixed oxides in catalytic combustion of methane: Comparison study and investigating the effect of preparation method A Shafaei, A Irankhah Molecular Catalysis 538, 112989 | 2023 |
| 3 | Increasing the efficiency of microreactors utilizing two-phase hydrodynamic focusing Y Kazemi, A Sadeghi, A Irankhah Chemical Engineering Science 264, 118188 | 2022 |
| 4 | Bimetallic iron–copper and iron–nickel nano-catalysts over ceria support for medium temperature shift reaction Y Davoodbeygi, A Irankhah International Journal of Hydrogen Energy 47 (66), 28462-28474 | 2022 |
| 5 | Screening of important factors affecting the process of ammonia synthesis by Plackett-Burman method and process optimization with RSM Screening the Important Factors Affecting ... AH Oudi, A Irankhah Iranian Journal of Chemical Engineering (IJChE) 19 (2), 3-20 | 2022 |
| 6 | Performance study of Ni, Co, and Mo catalysts supported on γ -Al ₂ O ₃ and HZSM5 in HDS reactions of mixed naphtha M Karimi Boroujeni, A Irankhah International Journal of Energy Research 46 (2), 995-1007 | 2022 |
| 7 | Electrophoretic coating for steam methane micro-reformer: Optimum voltage and time, channel design, and substrate type H Mohammadnezami, A Irankhah International Journal of Energy Research 45 (11), 15980-15991 | 2021 |
| 8 | Synthesis, characterization, and catalytic activity of Ni/CeMnO ₂ catalysts promoted by copper, cobalt, potassium and iron for ethanol steam reforming S Sohrabi, A Irankhah International Journal of Hydrogen Energy 46 (24), 12846-12856 | 2021 |
| 9 | Ethanol Steam Reforming on Ce _x M _y O ₂ (M: Cu, Zn, and Mn) Solid Solution Catalysts S Sohrabi, A Irankhah Chemical Engineering & Technology 44 (2), 213-222 | 2021 |
| 10 | Medium Temperature Shift Reaction Over Copper-Ceria catalyst in Fixed-Bed and Microchannel Reactors A Irankhah , Y Davoodbeygi Iranian Journal of Chemical Engineering (IJChE) 18 (1) | 2021 |

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| 11 | TiO ₂ -Coated Electrode for Plasma Dry Reformer for Synthesis Gas Production in Ambient Conditions SA Mousavi, A Irankhah , S Beitlafteh Advanced Ceramics Progress 6 (4), 22-27 | 2020 |
| 12 | Water-gas shift reaction in a microchannel Ni-based catalytic coated reactor: effect of solvents M Bazdar, A Irankhah Chemical Engineering & Technology 43 (12), 2428-2436 | 2020 |
| 13 | Cu, Mg and Co effect on nickel-ceria supported catalysts for ethanol steam reforming reaction Z Niazi, A Irankhah , Y Wang, H Arandiyani International Journal of Hydrogen Energy 45 (41), 21512-21522 | 2020 |
| 14 | CFD simulation of methane steam micro-reformer: channel design and inlet/outlet configuration H Mohammadnezami, A Irankhah Iranian Journal of Chemical Engineering (IJChE) 16 (4), 23-35 | 2019 |
| 15 | Catalytic activity of rare earth and alkali metal promoted (Ce, La, Mg, K) Ni/Al ₂ O ₃ nanocatalysts in reverse water gas shift reaction A Ranjbar, A Irankhah , SF Aghamiri Research on Chemical Intermediates 45, 5125-5141 | 2019 |
| 16 | Effect of MgAl ₂ O ₄ catalyst support synthesis method on the catalytic activity of nickel Nano catalyst in reverse water gas shift reaction A Ranjbara, F Aghamiri, A Irankhah Iranian Journal of Chemical Engineering (IJChE) 16 (3), 58-69 | 2019 |
| 17 | Catalytic characteristics of CexCu _{1-x} O _{1.9} catalysts formed by solid state method for MTS and OMTS reactions Y Davoodbeygi, A Irankhah International Journal of Hydrogen Energy 44 (31), 16443-16451 | 2019 |
| 18 | Nanostructured CeCu mixed oxide synthesized by solid state reaction for medium temperature shift reaction: Optimization using response surface method Y Davoodbeygi, A Irankhah International Journal of Hydrogen Energy 43 (49), 22281-22290 | 2018 |
| 19 | Hydrogen generation using activated aluminum/water reaction A Irankhah , SMS Fattahi, M Salem International Journal of Hydrogen Energy 43 (33), 15739-15748 | 2018 |
| 20 | Reverse water gas shift reaction and CO ₂ mitigation: nanocrystalline MgO as a support for nickel based catalysts A Ranjbar, A Irankhah , SF Aghamiri Journal of Environmental Chemical Engineering 6 (4), 4945-4952 | 2018 |
| 21 | Effect of Pt on Zn-Free Cu-Al Catalysts for Methanol Steam Reforming to Produce Hydrogen M Jafari, A Irankhah , M Mahmoudizadeh, N Hoshyar IJCCE | 2018 |

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| 22 | Single-stage water gas shift reaction over structural modified Cu–Ce catalysts at medium temperatures: Synthesis and catalyst performance AC Roshan, A Irankhah, M Mahmoudizadeh, H Arandiyani Chemical Engineering Research and Design 132, 843-852 | 2018 |
| 23 | Performance study on microchannel coated catalytic plate reactor using electrophoresis technique for medium temperature shift (MTS) reaction M Bazdar, A Irankhah Energy & Fuels 31 (7), 7624-7634 | 2017 |
| 24 | In situ coating of low carbon steel with NiAlFe powder mixture via mechanical alloying MR Bafandeh, A Omid, A Irankhah Surface and Coatings Technology 315, 268-273 | 2017 |
| 25 | Methanol Steam Reforming Catalyzing over Cu/Zn/Fe Mixed Oxide Catalysts A Irankhah , M Jafari, M Mahmoudizadeh Iranian Journal of Chemical Engineering (IJChE) 14 (1), 26-39 | 2017 |
| 26 | Synthesis, characterization, and evaluation of nickel catalysts on nanocrystalline CeO ₂ promoted by K and Mn for medium-temperature shift reaction and hydrogen purification A Irankhah , F Heidari, Y Davoodbeygi Research on Chemical Intermediates 43 (12), 7119–7136 | 2017 |
| 27 | Modified Claus Process Catalysts for Sulfur Recovery A Irankhah Farayandno 11 (53), 31-48 | 2016 |
| 28 | A Performance Study on Electrocoating Process with CuZnAl Nano-Catalyst for Methanol Steam Reformer: Effect of Time and Voltage M Mahmoudizadeh, A Irankhah , R Irankhah RSC Advances 6, 25934–25942 | 2016 |
| 29 | NiFe ₂ O ₄ Spinel Protection Coating for High-Temperature Solid Oxide Fuel Cell Interconnect Application R Irankhah, B Raissi, A Maghsoudipour, A Irankhah , S Ghashghai Journal of Materials Engineering and Performance, 1-11 | 2016 |
| 30 | Development of a replaceable microreactor coated with a CuZnFe nanocatalyst for methanol steam reforming M Mahmoudizadeh, A Irankhah , R Irankhah, M Jafari Chemical Engineering & Technology 39 (2), 322-330 | 2016 |
| 31 | Synthesis, characterization and application of Co–MgO mixed oxides in oxidation of carbon monoxide Z Fattah, M Rezaei, A Biabani-Ravandi, A Irankhah , HR Arandiyani Chemical Engineering Communications 203 (2), 200-209 | 2016 |
| 32 | Copper catalysts supported on CeMnO ₂ for CO oxidation in hydrogen-rich gas streams N Hoshyar, A Irankhah , M Jafari Iranian Journal of Chemical Engineering (IJChE) 12 (3), 3-14 | 2015 |

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| 33 | Preparation of Co–MgO mixed oxide nanocatalysts for low temperature CO oxidation: Optimization of preparation conditions Z Fattah, M Rezaei, A Biabani-Ravandi, A Irankhah Process Safety and Environmental Protection 92 (6), 948-956 | 2014 |
| 34 | Optimization of Preparation Factors for Cerium Oxide Synthesis as a Support for CO PrOx Catalyst N Hoshyar, A Irankhah Hydrogen, Fuel Cell & Energy Storage 1 (3), 189-197 | 2014 |
| 35 | Performance research on a methane compact reformer integrated with catalytic combustion A Irankhah , M Rahimi, M Rezaei Chemical Engineering & Technology 37 (7), 1220-1226 | 2014 |
| 36 | The Effect of Nickel and Graphite on the Hydrogen Storage Ability of Magnesium in the First Cycle S Sohrabi, A Irankhah Energy Technology 2 (9), 570–573 | 2014 |
| 37 | Effect of Surfactants and Digestion Time on Nano Crystalline Cerium Oxide Characteristics Synthesized by Differential Precipitation F Heidari, A Irankhah Ceramics International Available online 16 May 2014 In Press, Accepted ... | 2014 |
| 38 | Effect of Manganese Doped Ceria on Cu Catalyst in CO-PrOx Process N Hoshyar, A Irankhah | 2014 |
| 39 | Synthesis of Nano Crystalline CeO ₂ by Differential Precipitation; Effect of Digestion Time F Heidari, A Irankhah | 2014 |
| 40 | Modeling and Simulation of WGS Membrane Reactor for High-Purity Hydrogen for PEM Fuel Cell M Mahmoudizadeh, A Cheshmehroshan, A Irankhah | 2014 |
| 41 | Effect of platinum on Ceria supported Cu catalysts for PrOx process in fuel processors N Hoshyar, A Irankhah Hydrogen, Fuel Cell & Energy Storage 1 (1), 1-100 | 2014 |
| 42 | Co ₃ O ₄ spinel protection coating for solid oxide fuel cell interconnect application R irankhah, babak raissi, amir maghsoudipour, A Irankhah Iranian Journal of Hydrogen and Fuel Cell (IJHFC) 1 (2), 121-131 | 2014 |
| 43 | Electrophoretic deposition of MnCr R Irankhah, BR Dehkordi, A Maghsoudipour, A Irankhah Iranian Journal of Hydrogen & Fuel Cell 1, 21-26 | 2014 |
| 44 | Effect of platinum on ceria supported copper catalysts for PrOx process in fuel processors N Hoshyar, A Irankhah Iranian Journal of Hydrogen and Fuel Cell (IJHFC) 1 (1), 47-53 | 2014 |
| 45 | Hydrogenation of the Milled Mg-Ni Compound | 2013 |

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| | A Irankhah, S Sohrabi Energy Engineering and Management 3 (2), 14-19 | |
| 46 | Effect of Nickel Addition on Ceria-Supported Platinum Catalysts for Medium-Temperature Shift Reaction in Fuel Processors A Alijani, A Irankhah Chemical Engineering & Technology 36 (4), 552-558 | 2013 |
| 47 | مروری بر انتقال حرارت در مدل های مختلف مخازن ذخیره سازی هیدریدهای فلزی ایران خواه, عبدالله, سهرابی, خواجه نوری, مسعود نشریه علمی فرآیند نو ۷ (۴۰), ۳۵-۲۸ | 2013 |
| 48 | Medium-Temperature Shift Catalysts for Hydrogen Purification in a Single-Stage Reactor A Alijani, A Irankhah Chemical Engineering & Technology 36 (2), 209-219 | 2013 |
| 49 | ELECTROPHORETIC DEPOSITION OF NIFE 2 O 4 SPINEL ON SOFC INTERCONNECT R Irankhah, A Maghsoudipour, B Raissi, A Irankhah | 2013 |
| 50 | Scenario based priority setting of R&D issues: A case study of membrane technology in National Iranian Gas industry NB Moghaddam, M Sahafzadeh, SM Emamian, A Irankhah PICMET'08-2008 Portland International Conference on Management of ... | 2008 |
| 51 | Fischer-Tropsch synthesis over Co-Ru/ γ -Al ₂ O ₃ catalyst in supercritical media A Irankhah, A Haghtalab Chemical Engineering and Technology 31 | 2008 |
| 52 | Fischer-Tropsch Synthesis Over Co-Ru/ γ -Al ₂ O ₃ Catalyst in Supercritical Media A Irankhah, A Haghtalab Chemical Engineering & Technology: Industrial Chemistry-Plant Equipment ... | 2008 |
| 53 | Fischer-Tropsch reaction kinetics of cobalt catalyst in supercritical phase A Irankhah, A Haghtalab, EV Farahani, K Sadaghianizadeh Journal of Natural Gas Chemistry 16 (2), 115-120 | 2007 |
| 54 | Simulation of styrene monomer reactors M Sadrameli, A Irankhah, E Nateghi Petroleum technology quarterly, 149-151 | 2001 |

Conference papers:

1. M. Mahmoudizadeh, A. cheshmerowshan, **A. Irankhah**, "Modeling and Simulation of WGS Membrane Reactor for High-Purity Hydrogen for PEM Fuel Cell", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.

2. S. Sohrabi, **A. Irankhah**, "Effect of Graphite on Hydrogenation of Magnesium in Fuel Cell", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.
3. N. Hoshyar, **A. Irankhah**, "Effect of Manganese doped Ceria on Cu Catalyst in CO PrOx Process", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.
4. M.Jafari, **A. Irankhah**, "Effect of Cu Loading on Cu/Al Catalyst Performance in Methanol Steam Reforming (MSR)", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.
5. F. Heidari, **A. Irankhah**, "Synthesis of Nano Crystalline CeO₂ by Differential Precipitation; Effect of Digestion Time", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.
6. M.Rahimi, **A. Irankhah**, M. Rezaei, "Design of a compact plate reformer integrated to natural gas combustion", 4th Fuel & Combustion conference 2012.
7. M. Shabani, **A. Irankhah**, M. Mohsennia, "Synthesis and Characterization of Nanocomposite Membrane Based on Sulfonated PEEK and TPA/MMT for PEMFC", The 8th International Chemical Engineering Congress and Exhibition (IChEC 2014), 24-27 Feb. 2014, Kish Island, Iran.
8. M. Sadrameli, **A. Irankhah**, "*Simulation of the Fixed Bed Catalytic Reactors for the Styrene Monomer Plant*", Process Innovation and Process Intensification (PI), Edinburgh, Scotland, UK, September 8 - 13, 2002.
9. **A. Irankhah**, N. Bagheri Moghadam, K. Mohammadi, "*National roadmap for Solid Oxide fuel cell in Iran*", Third International Conference and Exhibition on Ecological Vehicles and Renewable Energies EVER08, Monaco, France, 2008.
10. N. Bagheri Moghadam, **A. Irankhah**, K. Mohammadi, "*National Planning and Development Roadmap of Polymer Electrolyte Membrane Fuel Cell in Iran*", Third International Conference and Exhibition on Ecological Vehicles and Renewable Energies EVER08, Monaco, France, 2008.
11. N. Bagheri Moghadam, M. Sahafzadeh, S.M. Emamian, **A. Irankhah**, "*Scenario Based Priority Setting of R&D Issues - A Case Study of Membrane Technology in National Iranian Gas Industry*", Technology Management for a Sustainable Economy, Cape Town, South Africa, July 27 - 31, 2008.
12. **A. Irankhah**, H. Bonyad, S. K. Masoudian, "*Determination of the Reaction rate for Natural Gas Steam Reforming for Production of Hydrogen as Fuel for Fuel Cells*", The 1st International Conference on Hydrogen and Fuel Cell, Jan 2009.

13. **A. Irankhah**, A. Haghtalab, “*Determination of the Kinetic Model for Fischer-Tropsch Synthesis on Co-Ru Catalyst in Supercritical Phase*”, The 2nd National Congress of Gas Conversions, Iran Petrochemical and Polymer Research Center, May 2007.
14. **A. Irankhah**, H. Bonyad, S. K. Masoudian, “*Determination of the Kinetic Model for Natural gas steam reforming to hydrogen as a fuel for fuel cells*”, the 1st National conference on hydrogen and fuel cells, Iran University of Science and Technology, 21-22 Jan. 2009.
15. **A. Irankhah**, A. Haghtalab, E. Vashegani, “*Study of Pressure Effects on FischerTropsch Synthesis in supercritical Phase*”, The 11th National Congress of Chemical Engineering, Tarbiat Modarres University, Nov 2006.
16. **A. Irankhah**, A. Haghtalab, K. Sadaghianizadeh, Kh. Jafari Jozani, “*Fischer-Tropsch Synthesis in supercritical Phase*”, The 1st National Congress of Gas conversions, Oct. 2006.
17. D. Vakili, **A. Irankhah**, “*Study of Silicalite (I) Adsorption Properties*”, The 8th National Congress of Chemical Engineering, Mashhad, Oct. 2003.
18. S.K. Masoudian, A. Abbasi, **A. Irankhah**, “*Regeneration of the used Catalysts for Conversion of Isobutane to Isobutene*”, The 8th National Congress of Chemical Engineering, Mashhad, Oct. 2003.
19. **A. Irankhah**, M. sadrameli, “*Simulation of Catalytic Reactors for Ethylbenzene dehydrogenation to Styrene*”, The 7th National Congress of Chemical Engineering, Tehran, Oct 2002.
20.

Academic Background:

Courses taught:

1. Heterogeneous Catalysts
2. Kinetics and Chemical Reactors Design
3. Advanced Heat Transfer
4. Experimental Design and Analysis
5. Fuel Cell Systems
6. Experimental Design and Analysis
7. Material & Energy Balance
8. Applied Mathematics in Chemical Engineering
9. Plant Design and Economy
10. Process Control I & II
11. Industrial Chemistry I & II
12. Gas Processing, Transmission, and Distribution
13. Numerical Method in Chem. Eng.

Academic Courses and Specialties:

- Fuel cell specialized teaching certificate from UNIDO-ICHET International Center.
- Teaching certificate of the Chemical Engineering specialized software ASPEN PLUS
- Proficient in the Chemical Engineering specialized software HYSYS.
- Proficient in the Experimental Design software Minitab and Design Expert.
- Familiar with the technology management specialized software “Expert Choice”

Affiliations and Memberships:

- Member of Iran Association of Catalyst
- Member of Iran Association of Chemical Engineering
- Member of Iran Association of Combustion
- Member of the referees committee of the “Applied Energy”
- Member of the referees committee of the “Int. J. of Hydrogen Energy”
- Member of the referees committee of the “Chem. And Engineering Technology” □ Member of the referees committee of the “Ceramic International”
- Member of the referees committee of the “Energy Technology and Management” Journal.
- Member of the referees committee of Iranian 1st, 2nd and 3rd Conferences on Hydrogen and Fuel Cell
- Member of the specialized referees committee of PhD and MS scholars’ thesis, supported by the fuel cell steering committee – with the priority of hydrogen and fuel cell
- Member of the specialized referees committee of PhD and MS scholars’ thesis, supported by Iran Nano Institute
- Member of the referees committee of the 3rd National Congress of Energy.
- Member of the scientific committee and referees committee of the 2nd International Congress of Surfactant
- Member of the executive and scientific committee of Iran 4th Fuel and Combustion conference.
- Member of the “Energy Research Center” in University of Kashan, 2009-2015.
- Instructor of the Hydrogen and Fuel Cell Workshop for the Chemistry Teachers.

Research Background:

- Experimental study on VOC Removal from Air in Industries
- Experimental study on Reactions in Plasma Reactors
- Experimental study on Medium Temp. Shift reaction catalysts (Ni, Pt, Cu , ...)
- Experimental study of Preferential Oxidation of CO reaction catalysts (Cu/ CeO₂, ...)
- Experimental study of Methane steam micro-reformers and catalysts

- Experimental study of Methanol steam micro-reformers and catalysts
- Experimental study of Ethanol steam micro-reformers and catalysts
- Experimental study of Hydrogen sorption in metal hydrides
- Experimental study of Fischer-Tropsch synthesis using supercritical fluid for conversion of natural gas to liquid-GTL hydrocarbons – PhD thesis
- Comparison of Fischer-Tropsch synthesis in gas phase and supercritical phase, and investigation of the effect of the major variables on this process
- Determination of Co-Ru/Al₂O₃ kinetic in Fischer-Tropsch synthesis in supercritical phase
- Simulation of Tabriz Petrochemical Styrene Monomer Unit and optimization of the related reactors consisting three series of radial reactors and four distillation towers – MS thesis
- Preparation of simulating visual software of Tabriz Petrochemical Styrene Monomer Unit for use in designing the pilot of the unit
- Synthesizing a Fe-K catalyst for the Adiabatic Ethyl-Benzene Dehydrogenation Unit of Research Institute of Petroleum Industry (RIPI) in laboratory scale – a catalyst for a subprocess related to Ethyl-Benzene dehydrogenation
- Kinetic study of methane steam reforming in Berty internal recycle reactor at RIPI Catalyst Research Unit
- Kinetic study of Co catalyst in Fischer-Tropsch synthesis in gas phase at RIPI Gas Research Unit
- Investigation of the determinant factors on the deactivation of commercial catalysts and kinetic study of Fe catalyst deactivation in Fischer-Tropsch synthesis in gas phase at RIPI Gas Research Unit
- Determination of the research priorities in membrane technology for Iran National Company of Gas, Petrochemical, and Oil Industry
- Preparation of the strategies for gas conversion in the country
- Designing a Methanol to Hydrogen Reformer
- Supervisor of the project “Construction of Highly Efficient Photovoltaic Plates”
- Manager of the project “Construction and Evolution of Magnesium Hydride Powders for the Storage of Hydrogen Needed for Fuel Cells”
- Execution of the national project “Plan of Strategies and Studies for Progress of Fuel Cell in the Country”
- Preparation of “National Strategy Document for Progress of Fuel Cell in the Country” based on the fundamental studies ratified by the Cabinet in Jun 2007
- Operational planning for “National Strategy Document for Progress of Fuel Cell in the Country”