

# Curriculum Vita

## personality

**Full name:** Mohammad Zhiani  
*Professor of Physical Chemistry  
(Surface Electrochemistry, Electrochemical Energy  
production; Fuel cells, Electrolyzers)*

**birthday:** 11/07/1975

**Address:**

1- Faculty of chemistry, Isfahan university  
of Technology, Isfahan, Iran

2- Department of Chemistry, Tarbiat Modares University (TMU), P.O. Box 14115-  
175, Tehran, Iran

**Tel/Fax:** +98 21-82883495

**E-mail:** Mohammad.zhiani@gmail.com



## Education

**2010- Summer sabbatical in ICCOM CNR- Italy**

**2006- 2008 :**

**Postdoc – CNR- Florence- Italy.**  
& Acta- SpA high-tech society in Lavoria (Pisa).

Developing new electrocatalysts and MEAs for Fuel cells, (PEMFC, DMFC, DAFC)  
single and stack cells, Ammonia and water electrolyzers, Ethanol reforming

**2000 – 2005:**

**Ph.D. (Physical Chemistry), University of Tarbiat Modarres, Tehran, Iran.**  
GPA: 17.09/20

**Thesis Title:** Design and Construction of novel membrane electrode assembly  
nanostructure in polymer electrolyte fuel cell & characterization of physico-chemical  
properties using electrochemical and spectroscopic techniques.  
Grade: 19.9/20.

**1998 – 2000:**

**M.Sc. Physical Chemistry), University of Tarbiat Modarres, Tehran, Iran.** GPA:  
17.52/20.00.

**Project:** Design and Construction of Phosphoric Acid Fuel Cell using GDE  
modified with conductive polymer. Grade: 19.5/20.

**1994-1998**

**B.Sc(pure Chemistry), University of Tabriz, Tabriz, Iran.** GPA: 16 34/20.00.

**Project:** Design and Construction of pH sensor using *polyaniline film*.  
Grade: 20/20.

## Awards and Honors

- Selected project, National, 2<sup>nd</sup> Elm Ta Amal-1390 (2011)
- Selected Researcher in Isfahan State – 1391 (2012)

## Work experience

- **October 2018 up to Now**– Full professor of Physical chemistry in Isfahan University of Technology, Isfahan, Iran
- **November 2013 up to October 2018**– Associate professor of Physical chemistry in Isfahan University of Technology, Isfahan, Iran
- **February 2008 up to December 2013**—Assistant professor of Physical chemistry in Isfahan University of Technology, Isfahan, Iran
- **2010; Summer sabbatical stage** ; ICCOM- CNR Florence Italy
- **May 2006 – February 2008**, Member of R&D group of ACTA S.P.A in Italy and as a Postdoc student in ICCOM-CNR, Florence, Italy.
- *Developing new electrocatalysts and MEAs for Fuel cells, (PEMFC, DMFC, DAFC) single and stack cells, Ammonia and water electrolyzers, Ethanol reforming*
- **September 2004 – May 2006** , Material Group, R&D Center, Iran Khodro Co.
- **October 2003- September 2004** – Hybrid Vehicle Group ,Electronic and Electric Dept., R&D Center, Iran Khodro Co.
- *Research on different type of battery and fuel cell for application in hybrid vehicles.*
- **January 2000 – October 2003**, Member of MEA group ,Fuel Cell Dept., R&D Center, Iran Khodro Co.
- *Research on different methods for preparation and evaluation of MEA in PEMFC .*

## Teaching

**February 2008- present, Isfahan university of Technology,**

**Graduate courses :** a - Electrochemical energy materials (PhD)

(Fuel cells, Electrolyzers, Surfactants,...)

- b- Surface Chemistry (MS)
- c- Hydrogen and fuel cell (Msc)
- d- New aspect in Electrochemisrty (PhD)

**Under Graduate courses:** a- Physical Chemistry for engineering

- b- Physical Chemistry II
- c- General chemistry for engineering
- d- new aspect in chemistry
- e- surface chemistry and solid state

**Novamber. 2004 – May 2006, Physical chemistry Instructor . Islamic republic educational center, Tehran,, Iran.**

**Sep. 2001 – sep. 2002, Teaching Assistant (New aspect of physical chemistry) at Educational center of breliant talents, Tehran, Iran.**

**1. Novamner. 2004 – May 2006, Physical chemistry Instructor . Islamic republic educational center, Tehran,, Iran.**

**2. Sep. 2001 – sep. 2002, Teaching Assistant (New aspect of physical chemistry) at Educational center of breliant talents, Tehran, Iran.**

### **Skills**

- *Developing of new electro-catalysts and MEA for different types of fuel cells (PEMFC, DMFC, DAFC)*
- *Construction and Evaluation of Electrolyzes ( AEMWE, PEMWE, HER & OER catalysts)*
- *Hydrogen generators: ( PEMWE, AEMWE,performance analysis& diagnosis)*
- *Preparation, Evaluation and performance analysis of Batteries*
- *Fuel Cell & Batteries & Electrolyzers Testing and Diagonistic*

### **Publication**

56. S. M.Seyed Bagheri, H.Gharibi, **M. Zhiani** Introduction of a A new active and stable cathode catalyst based on bimetal-organic frameworks/PPy-sheet for alkaline direct ethanol fuel cell, International Journal of Hydrogen Energy Volume 47, Issue 56, 2022, Pages 23552-23569. <https://doi.org/10.1016/j.ijhydene.2022.05.142>

55. M. Jafari, H. Gharibi, M. Kazemi, A. Heydari, **M. Zhiani**, M. J Parnian-nitrogen co-doped hierarchical porous carbon derived from the bimetallic metal-organic framework as ORR electrocatalyst for passive alkaline direct ethanol fuel cell, *Journal of Electroanalytical Chemistry*, Volume 920, 2022, 116620. <https://doi.org/10.1016/j.jelechem.2022.116620>

54. Leila Rostami, Masoud Haghshenasfard, Morteza Sadeghi, **Mohammad Zhiani** 'A 3D CFD model of novel flow channel designs based on the serpentine and the parallel design for performance enhancement of PEMFC' *Energy*, Volume 258, 2022, 124726. <https://doi.org/10.1016/j.energy.2022.124726>

53- Fatemeh Arshadi Hussein Gharibi, Ali Morsali, **M. Zhiani**, A novel electrocatalyst based on Fe-ZIF-PPY nanocomposite for oxygen reduction reaction in air-breathing direct-ethanol fuel cell, *Applied Surface Science*, Volume 584, 15 May 2022, 152529. <https://doi.org/10.1016/j.apsusc.2022.152529>

52- **Mohammad Zhiani**, Saeid Barzi, Amirhossein Azhari, Ex vivo energy harvesting by a by-pass depletion designed abiotic glucose fuel cell operated with real human blood serum, *Journal of Power Sources* Volume 521, 15 February 2022, 230972. <https://doi.org/10.1016/j.jpowsour.2021.230972>

51- **Mohammad Zhiani**, Marzieh Gholamian, Saeid Barzi, Pd electrodeposition on a novel substrate of reduced graphene oxide/ poly(melem-formaldehyde) nanocomposite as an active and stable catalyst for ethanol electrooxidation in alkaline media ,*International Journal of Hydrogen* , Volume 47, Issue 6, 19 January 2022, Pages 3801-3813. <https://doi.org/10.1016/j.ijhydene.2021.11.033>

50- H Gharibi, N Dalir, M Jafari, MJ Parnian, **M Zhiani**, Engineering dual metal single-atom sites with the nitrogen-coordinated nonprecious catalyst for oxygen reduction reaction (ORR) in acidic electrolyte, *Applied surface science*, Volume 572, 15 January 2022, 151367

49- M Gholamian, **M Zhiani**, S Barzi, A comparative study of Pd/rGO and Pd–Cu/rGO toward electrooxidation of low ethanol concentrations for fuel cell-based breath alcohol analyzer application

48- Z Karami, M Youssefi, K Raeissi, **M Zhiani**, Effect of the morphology of silver layer on electrical conductivity and electrochemical performance of silver/reduced graphene oxide/cotton fabric composite as a flexible , *Journal of Energy Storage* , Volume 42, October 2021, 103042...

47- K Firouz Tadavani, A Abdolmaleki, MR Molavian, **M Zhiani**, New Strategy Based on Click Reaction for Preparation of Cross-Linked Poly (Benzimidazolium-Imide) as an Anion-Exchange Membrane with Improved Alkaline Stability

46- Z Karami, M Youssefi, K Raieisi, **M Zhiani**, An efficient textile-based electrode utilizing silver nanoparticles/reduced graphene oxide/cotton fabric composite for high-performance wearable supercapacitors, *Electrochimica Acta*, Volume 368, 1 February 2021, 137647.

45- S Kamali, **M Zhiani**, H Tavakol, Synergism effect of first row transition metals in experimental and theoretical activity of NiM/rGO alloys at hydrogen evolution reaction in alkaline electrolyzer, *Renewable Energy* Volume 154, July 2020, Pages 1122-1131

44-**M Zhiani**, S Barzi, M Gholamian, A Ahmadi, Synthesis and evaluation of Pt/rGO as the anode electrode in abiotic glucose fuel cell: Near to the human body physiological condition, *International Journal of Hydrogen Energy*, Volume 45, Issue 24, 5 May 2020, Pages 13496-13507

43- F Madadi, A Rezaeian, H Edris, **M Zhiani** ,Improving performance in PEMFC by applying different coatings to metallic bipolar plates

42- S Barzi, **M Zhiani**, A Ahmadi , Evaluation of carbon supported Fe–Co electrocatalyst for selective oxygen reduction to use in implantable glucose fuel cell, *International Journal of Hydrogen Energy*, Volume 44, Issue 59, 29 November 2019, Pages 31515-31524.

41. Mohammad Mohammadi Taghiabadi, **Mohammad Zhiani**, Valter Silva. **Effect of MEA activation method on the long-term performance of PEM fuel cell**, *Applied Energy*, 242 (2019) 602-11  
Doi: 10.1016/j.apenergy.2019.03.157

40. Mohammad Mohammadi Taghiabadi, **Mohammad Zhiani**. **Degradation analysis of dead-ended anode PEM fuel cell at the low and high thermal and pressure conditions**, *International Journal of Hydrogen Energy*, 44 (2019) 4985-95  
Doi: 10.1016/j.ijhydene.2019.01.040

39. Sharif Jannat, Hamed Rashtchi, Masoud Atapour, Mohammad Ali Golozar, , **Mohammad Zhiani**, Preparation and performance of nanometric Ti/TiN multi-layer physical vapor deposited coating on 316L stainless steel as bipolar plate for proton exchange membrane fuel cells , *Journal of Power Sources*, Volume 435, 30 September 2019.  
Doi: 10.1016/j.jpowsour.2019.226818

38. Koorosh Firouz Tadavani, Amir Abdolmaleki, Mohammad Reza Molavian, **Mohammad Zhiani**, A mechanically robust multication double-network polymer as an anion-exchange membrane: High ion conductivity and excellent chemical stability,*Polymer*, Volume 178, 12 September 2019,

<https://doi.org/10.1016/j.polymer.2019.121608>

37. M. Jafari, H. Salamati, M. Zhiani, E. Shahsavari. **Enhancement of an IT-SOFC cathode by introducing YSZ: Electrical and electrochemical properties of  $\text{La}_{0.6}\text{Ca}_{0.4}\text{Fe}_{0.8}\text{Ni}_{0.2}\text{O}_3$ -d-YSZ composites**, International Journal of Hydrogen Energy, 44 (2019) 1935-66

Doi: 10.1016/j.ijhydene.2018.10.151

36. Mohammad Zhiani, Amir Abedini, Somayeh Majidi. **Comparison of Electro-Catalytic Activity of Fe-Ni-Co/C and Pd/C Nanoparticles for Glucose Electro-Oxidation in Alkaline Half-Cell and Direct Glucose Fuel Cell**, Electrocatalysis, 9 (2018) 735-43

Doi:10.1007/s12678-018-0483-1

35. Fariba Jalili, Mohammad Zhiani, Saeedeh Kamali. **Preparation and evaluation of a new hybrid support based on exfoliation of graphite by ball milling for Ni nanoparticles in hydrogen evolution reaction**, International Journal of Hydrogen Energy, 43 (2018) 21187-95

Doi: 10.1016/j.ijhydene.2018.09.202

34. Mohammad Mohammadi Taghiabadi, Mohammad Zhiani, Mahboobeh Shahfiei. **Influence of the Cathode Catalyst Layer Void Volume on the Short-term and Long-term Performance of PEM Fuel Cell**, Fuel Cells, 18 (2018) 731-41

DOI: 10.1002/fuce.201800023

33. Mohammad Reza Movahedi, Amir Abdolmaleki, Hamidreza Gharibi, Koorosh FirouzTadavani, Mohammad Zhiani, ***Two highly strong semi-IPNs for proton exchange membrane fuel cell (PEMFC) application***, Materials today Communication, 15 (2018) 94-99

Doi:10.1016/j.mtcomm.2018.03.001

32. Hamed Rashtchi, Yasna Acevedo Gomez, Keyvan Raeissi, Morteza Shamanian, Björn Eriksson, Mohammad Zhiani, Carina Lagergrenand, Raket Wreland Lindström, ***Performance of a PEM Fuel Cell Using Electroplated Ni-Mo and Ni-Mo-P Stainless Steel Bipolar Plates***, Journal of Electrochemical Society, 164, (2017)1427-1436

doi: 10.1149/2.0771713jes

31. ValterSilva, DanielaEusébio, JoãoCardoso, MohammadZhiani, Somayeh Majidi, ***Targeting optimized and robust operating conditions in a hydrogen-fed Proton Exchange Membrane Fuel Cell***, Energy Conversion and Management, 154 (2017) 149-156

[doi.org/10.1016/j.enconman.2017.10.053](https://doi.org/10.1016/j.enconman.2017.10.053)

30. MohammadZhiani, Fariba Jalili, Saeede Kamali, ***In situ cathode polarization measurement in alkaline anion exchange membrane water***

***electrolyzer equipped with a PdNiFeCo/C-Ceria hydrogen evolution electrocatalyst***, International Journal of Hydrogen Energy 42 (2017) 26563-26574

DOI: 10.1016/j.ijhydene.2017.09.038

29. Mohammad Reza Molavian, Amir Abdolmaleki, Koorosh Firouz Tadavani, ***Mohammad Zhiani***, ***A new sulfonated poly(ether sulfone) hybrid with low humidity dependence for high temperature proton exchange membrane fuel cell applications***, Applied Polymer, 34 (2017) 45342  
[doi.org/10.1002/app.45342](https://doi.org/10.1002/app.45342)

27. Koorosh Firouz Tadavani, Amir Abdolmaleki, Mohammad Reza Molavian, Sedigheh Borandeh, Elahe Sorvand, and ***Mohammad Zhiani***, ***Synergistic behavior of phosphonated and sulfonated groups on proton conductivity and their performance for high-temperature proton exchange membrane fuel cells (PEMFCs)*** Synergistic behavior of phosphonated and sulfonated groups on proton conductivity and their performance for high-temperature proton exchange membrane fuel cells (PEMFCs), Energy Fuels, 31 (2017), 11460–11470

DOI: 10.1021/acs.energyfuels.7b01065

27. ***Mohammad Zhiani***, Saeedeh kamali, *Synergistic Effect of Ceria on the Str. Evolution Activity of Nickel Nanoparticles Grown on the Reduced Graphene Oxide* Chemistry A, 5, (2017),8108-8116.

DOI: 10.1039/c7ta00146k.

26. ***Mohammad Zhiani***, Fariborz Chitsazzadeh, *Synergistic Ion Intercalations for of Li-Doped Graphene Nanosheets as an Efficient Electrocatalyst for Oxygen Redu* Volume 8, Issue 2, pp 170–177.

25. ***M. Zhiani***, I. Mohammadi, S. Majidi, *Membrane electrode assembly steaming as a novel pre-conditioning procedure in proton exchange membrane fuel cell*, International Journal of Hydrogen Energy, Volume 42, Issue 7, 16 February 2017, Pages 4490-4500

24. S. Meghdadi, M. Amirnasr, ***M. Zhiani***, F. Jalili, M. Jari, M. Kiani (2016) ***Facile Synthesis of Cobalt Oxide Nanoparticles by Thermal Decomposition of Cobalt(II) Carboxamide Complexes: Application as Oxygen Evolution Reaction Electrocatalyst in Alkaline Water Electrolysis***, Electrocatalysis, 2017, Volume 8, Issue 2, pp 122–131.

23. ***M. Zhiani***, S. Majidi, V. B. Silva, H. Gharibi (2016) ***Comparison of the performance and EIS (electrochemical impedance spectroscopy) response of an activated PEMFC (proton exchange membrane fuel cell) under low and high thermal and pressure stresses***, Energy, 97, 560-567

22. ***M. Zhiani***, S. Kamali, S. Majidi (2016) ***In-plane gas permeability and***

*thought-plane resistivity of the gas diffusion layer influenced by homogenization technique and its effect on the proton exchange membrane fuel cell cathode performance*, International Journal of Hydrogen Energy, 41, 1112-1119

21. A. Abdolmaleki, **M. Zhiani**, M. Maleki, S. Borande (2015) **Preparation and evaluation of sulfonated polyoxadiazole membrane containing phenol moiety for PEMFC application**, Polymer, 75, 17-24

20. **M. Zhiani**, I. Mohammadi and N. Salehi (2015) **Carbon supported Fe–Co nanoparticles with enhanced activity and BH<sub>4</sub><sup>–</sup> tolerance used as a cathode in a passive air breathing anion exchange membrane direct borohydride fuel cell**, RSC Adv., 5, 23635-23645  
DOI: 10.1039/C4RA12857E

19. **Zhiani, M.**, Majidi, S., Rostami, H., Taghiabadi, M.M. **Comparative study of aliphatic alcohols electrooxidation on zero-valent palladium complex for direct alcohol fuel cells**  
(2015) International Journal of Hydrogen Energy, 40 (1), pp. 568-576.  
DOI: 10.1016/j.ijhydene.2014.10.144

18. **Zhiani, M.**, Majidi, S. **Effect of gas diffusion electrode pre-treatment by ultrasonic bath cleaning technique on proton exchange membrane fuel cell performance**  
(2014) International Journal of Hydrogen Energy, 39 (24), pp. 12870-12877.  
DOI: 10.1016/j.ijhydene.2014.06.092

17. **Zhiani, M.**, Majidi, S., Taghiabadi, M.M. **Comparative study of on-line membrane electrode assembly activation procedures in proton exchange membrane fuel cell**  
(2013) Fuel Cells, 13 (5), pp. 946-955.  
DOI: 10.1002/fuce.201200139

16. Mallakpour, S., **Zhiani, M.**, Barati, A., Rostami, H. **Improving the direct methanol fuel cell performance with poly(vinyl alcohol)/titanium dioxide nanocomposites as a novel electrolyte additive**  
(2013) International Journal of Hydrogen Energy, 38 (28), pp. 12418-12426.  
DOI: 10.1016/j.ijhydene.2013.07.032

15. **Zhiani, M.**, Majidi, S. **Effect of MEA conditioning on PEMFC performance and EIS response under steady state condition**  
(2013) International Journal of Hydrogen Energy, 38 (23), pp. 9819-9825.

DOI: 10.1016/j.ijhydene.2013.05.072

14. **Zhiani, M., Jalili, J., Rezaei, B., Taghiabadi, M.M. Methanol electrooxidation on synthesized PtRu nanocatalyst supported on acetylene black in half cell and in direct methanol fuel cell**

(2013) International Journal of Hydrogen Energy, 38 (13), pp. 5419-5424.

DOI: 10.1016/j.ijhydene.2012.12.088

13. **Zhiani, M., Rostami, H., Majidi, S., Karami, K. Bis (dibenzylidene acetone) palladium (0) catalyst for glycerol oxidation in half cell and in alkaline direct glycerol fuel cell**

(2013) International Journal of Hydrogen Energy, 38 (13), pp. 5435-5441.

DOI: 10.1016/j.ijhydene.2012.09.001

12. **Kakaei, K., Zhiani, M. new method for manufacturing graphene and electrochemical characteristic of graphene-supported Pt nanoparticles in methanol oxidation**

(2013) Journal of Power Sources, 225, pp. 356-363.

DOI: 10.1016/j.jpowsour.2012.10.003

11. **Zhiani, M., Gharibi, H., Kakaei, K. Performing of novel nanostructure MEA based on polyaniline modified anode in direct methanol fuel cell**

(2012) Journal of Power Sources, 210, pp. 42-46.

DOI: 10.1016/j.jpowsour.2012.02.081

10. **Gharibi, H., Kakaei, K., Zhiani, M., Taghiabadi, M.M. Effect of polyaniline-doped trifluoromethane sulfonic acid nanofiber composite film thickness on electrode for methanol oxidation**

(2011) International Journal of Hydrogen Energy, 36 (20), pp. 13301-13309.

DOI: 10.1016/j.ijhydene.2010.09.080

9. **Zhiani, M., Gasteiger, H.A., Piana, M., Catanorchi, S. Comparative study between platinum supported on carbon and non-noble metal cathode catalyst in alkaline direct ethanol fuel cell (ADEFC)**

(2011) International Journal of Hydrogen Energy, 36 (8), pp. 5110-5116. DOI: 10.1016/j.ijhydene.2011.01.079

8. **Zhiani, M., Gharibi, H., Kakaei, K. Optimization of Nafion content in Nafion-polyaniline nano-composite modified cathodes for PEMFC application**

(2010) International Journal of Hydrogen Energy, 35 (17), pp. 9261-9268.  
DOI: 10.1016/j.ijhydene.2010.04.019

7. **Zhiani, M., Rezaei, B., Jalili, J. Methanol electro-oxidation on Pt/C modified by polyaniline nanofibers for DMFC applications**

(2010) International Journal of Hydrogen Energy, 35 (17), pp. 9298-9305.  
DOI: 10.1016/j.ijhydene.2010.03.050

6. Gharibi, H., Kakaei, K., **Zhiani, M. Platinum nanoparticles supported by a vulcan XC-72 and PANI doped with trifluoromethane sulfonic acid substrate as a new electrocatalyst for direct methanol fuel cells**

(2010) Journal of Physical Chemistry C, 114 (11), pp. 5233-5240.  
DOI: 10.1021/jp9119414

5. Bambagioni, V., Bianchini, C., Marchionni, A., Filippi, J., Vizza, F., Teddy, J., Serp, P., **Zhiani, M. Pd and Pt-Ru anode electrocatalysts supported on multi-walled carbon nanotubes and their use in passive and active direct alcohol fuel cells with an anion-exchange membrane (alcohol = methanol, ethanol, glycerol)**

(2009) Journal of Power Sources, 190 (2), pp. 241-251.  
DOI: 10.1016/j.jpowsour.2009.01.044

4. Kheirmand, M., Gharibi, H., Abdullah Mirzaie, R., Faraji, M., **Zhiani, M. Study of the synergism effect of a binary carbon system in the nanostructure of the gas diffusion electrode (GDE) of a proton exchange membrane fuel cell**

(2007) Journal of Power Sources, 169 (2), pp. 327-333.  
DOI: 10.1016/j.jpowsour.2007.03.053

3. Gharibi, H., **Zhiani, M.**, Mirzaie, R.A., Kheirmand, M., Entezami, A.A., Kakaei, K., Javaheri, M. **Investigation of polyaniline impregnation on the performance of gas diffusion electrode (GDE) in PEMFC using binary of Nafion and polyaniline nanofiber**

(2006) Journal of Power Sources, 157 (2), pp. 703-708.  
DOI: 10.1016/j.jpowsour.2005.11.044

2. Gharibi, H., **Zhiani, M.**, Entezami, A.A., Mirzaie, R.A., Kheirmand, M., Kakaei, K. **Study of polyaniline doped with trifluoromethane sulfonic acid in gas-diffusion electrodes for proton-exchange membrane fuel cells**

(2006) Journal of Power Sources, 155 (2), pp. 138-144.  
DOI: 10.1016/j.jpowsour.2005.05.016

1. Gharibi, H., Mirzaie, R.A., Shams, E., **Zhiani, M.**, Khairmand, M. **Preparation of platinum electrocatalysts using carbon supports for oxygen reduction at a gas-diffusion electrode**

(2005) Journal of Power Sources, 139 (1-2), pp. 61-66.

DOI: 10.1016/j.jpowsour.2004.06.075

### **Book**

1- PEM Fuel Cells; Theory and Practice, By: F.Barbir, Translated in persian by: M.Zhiani

### **Research Projects**

**More than 20 Projects in PEMFC(MEA preparation&diagonistic), Electrolyzers (PEMWE, AEMWE) and Li/SOCI<sub>2</sub> Battery**, selected are;

- 1- Fisibility study and conceptual design of an air independent propulsion system based on fuel cell , 1388-1390, Shahin shahr – Subsea institue
- 2- Design and construction of a fuel cell test staion with capacity of 100W , 1390-1391, Iran National Science Fundation (INSF)
- 3- Design and construction of a charger based on muti fuel air breathing fuel cell ,1392 -1392, Iran National Science Fundation (INSF)
- 4- MEA development for **Air beathing direct alcohole fuecells**
- 5- MEA development for **Implantable Glocuse fuel cell**,
- 6- H<sub>2</sub> generator preparation base on AEMWE with capacity of 300ml/min.

### **Conferences**

1. *Synthesis and evaluation of Fe/rGO electro catalyst by different reducing agents for HER in alkaline media, 4th Hydrogen & Fuel Cell conference, 2017*

2. *Comparison of nickel copper and brass sheets as electrodes for oxygen evolution reaction in alkaline media, 4th Hydrogen & Fuel Cell conference, 2017*

3. *Study of hydrogen evolution reaction activity on nickel copper brass stainless steel in alkaline media, 4th Hydrogen & Fuel Cell conference, 2017*

4. *Decreasing the effect of Kinetic polarization by using reduced graphene oxide as an electrocatalyst for cathode support in lithium thionyl chloride battery,12th I Biennial Electrochemistry seminar 2017*

5-*Evaluation of alkaline hydrogen evolution reaction enhancing on Ni-Co/rGO in comparision to Ni/rGO,12th I Biennial Electrochemistry seminar 2017*

6. *Preparation and Evaluation of Nanocomposite Membranes Based on Sulfonated Graphene Oxide and Carbon Nanotube for Aluminum Air Batteries*, 12th Iranian Electrochemistry seminar, 2016
7. **OPTIMIZATION OF CATALYST LAYER NAFION CONTENT IN PEMFC CATHODE ELECTRODE MADE BY BALLARD CARBON PAPER AS ELECTRODE SUBSTRATE**, 19th Iranian Physical chemistry seminar, 2016
8. *Effect of operation conditions of the MEA activation procedure on the PEMFC performance EndFragment*, 3rd Hydrogen & Fuel Cell conference, 2016
9. *Electrochemical Analysis of Anodic Catalysts in Direct Borohydride Fuel Cell*, 8th Iranian Fuel Cell seminar, 2016
10. *Effect of Potential Cyclic and External Humidity Injection on Proton Exchange Membrane Fuel Cell Performance*, 8th Iranian Fuel Cell seminar, 2016
11. *Investigation of Electrochemical Impedance Spectroscopy Response of Membrane Electrode Assembly with Time in the PEMFCs*, 8th Iranian Fuel Cell seminar, 2016
12. *Analysis of Membrane Electrode Assembly Performance with Time in the PEMFC*, 8th Iranian Fuel Cell seminar, 2016
13. *Evaluation of a Porous Nano Structure Electrode Base on Pt-Free Nano Catalyst for Direct 2-Propanol Fuel Cell*, 8th Iranian Fuel Cell seminar, 2016
14. *Effect of operation conditions of the MEA activation procedure on the PEMFC performance*, 3th Hydrogen & Fuel Cell Conference, 2015, IROST, Tehran
15. *Preparation and evaluation of Copper particles on reduced graphene oxide as an efficient electrocatalyst for enhancing electrochemical performance of the Lithium-Thionyl Chloride Batteries*, Graphen Malaysia, 2016
16. *Reduction of Voltage Delay and Improving the Shelf Life of Li/SOCl<sub>2</sub> Battery System by Using Poly-Vinyl Chloride (PVC) as an Electrolyte Additive*, 12th Iranian Electrochemistry seminar, 2016
17. *Decreasing the effect of kinetic polarization by using reduced graphene oxide as an electrocatalyst for cathode support in lithium thionyl chloride battery*, 12th Iranian Electrochemistry seminar, 2016
18. *Evaluation of alkaline hydrogen evolution reaction enhancing on Ni-Co/rGO in comparison to Ni/rGO ride battery*, 12th Iranian Electrochemistry seminar, 2016
19. *Electrooxidation of glucose on the Pt-free nano electrocatalysts in alkaline medium*, 12th Iranian Electrochemistry seminar, 2016
20. *Preparation and Evaluation of New Anode Electrode Microstructure based on Iron-Nickel-Cobalt Nano Catalyst for Direct Fuel Cell 1-Propanol*, 8th Iranian Fuel Cell Seminar, 2015

21. *Evaluation of a Porous Nano Structure Electrode Base on Pt-Free Nano Catalyst for Direct 2-Propanol Fuel Cell, 8th Iranian Fuel Cell Seminar, 2015*
22. *Electrochemical Analysis of Anodic Catalysts in Direct Borohydride Fuel Cell , 8th Iranian Fuel Cell Seminar,2015*
23. *Performance Comparison of the Two Commercial PEMFC Electrode Substrate: Tory and Ballard Carbon Paper, 8th Iranian Fuel Cell Seminar,2015*
24. *Effect of Potential Cyclic and External Humidity Injection on Proton Exchange Membrane Fuel Cell Performance, 8th Iranian Fuel Cell Seminar,2015*
25. *Analysis of Membrane Electrode Assembly Performance with Time in the PEMFC, 8th Iranian Fuel Cell Seminar,2015*
26. *Investigation of Electrochemical Impedance Spectroscopy Responce of Membrane Electrode Assembly with Time in the PEMFCs , 8th Iranian Fuel Cell Seminar, 2015*
27. *Electrooxidation of glucose on the Pt-free nano electrocatalysts in alkaline medium, 10th Iranian Electrochemistry Seminar, 2014*
28. *Preparation and evaluation of alkaline direct glucose fuel cell based on Pt free anode catalyst, 10th Iranian Electrochemistry Seminar, 2014*
29. *Electrochemical Analysis of a PEMFC under Different Operation Condition, 20th Iranian Analytical Chemistry Conference 2014*
30. *AC Impedance Characteristics of a PEM Fuel Cell under Different Gas Feed Modes; H<sub>2</sub>/O<sub>2</sub> and H<sub>2</sub>/Air, 20th Iranian Analytical Chemistry Conference 2014*
31. *Preparation and Evaluation of a Porous Anode Electrde Base on Pt-free Nano Catalysts for Direct Ethylene glycol Fuel Cell (DEGFC), 17th Iranian Physical Chemistry conference,2014*
32. *Electrochemical Analysis of Low-cost Nanocatalysts in Cathodic Reactions of Direct Borohydride Fuel Cell, 20th Iranian Analytical Chemistry Conference 2014*
33. *Comparative Study of Platinum and Non-Platinum Cathode Nanocatalysts in Direct Borohydride Fuel Cell, 6th Iranian Fuel Cell Seminar,2013*
34. *Effect of nafion content on cathode catalyst layer void volume and PEMFC*

*performance, 9th Iranian Electrochemistry Seminar 2013*

35. *Performance Analysis of a PEM Fuel Cell at Different Cathode Relative Humidity, 9th Iranian Electrochemistry Seminar 2013*

36. *Impedance Response Analysis of PEM Fuel Cell under Different Operation Conditions, 9th Iranian Electrochemistry Seminar 2013*

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### **Innovation**

*1- Air breathing direct sodium borohydrid fuel cell*

*No: 70572- Country: Iran-*

*2- Air breathing direct ethanol fuel cell*

*No: 70573-Country: Iran*

*3- Effect of ionic liquid structure on the performance of anode catalyst in DMFC*

*No: 66919-Country: Iran*

*4- Preparation of Novel Nanostructure PANI/Pt/C for using in DMFC anode*

*No: 59067 Country: Iran- Confirmed by IROST*

*5- Design and Construction of novel membrane electrode assembly nanostructure using modified electrodes.*

*No: 12302 Country: Iran- Confirmed by IROST*

*6- Gas Supply Subsystem for fuel cell application*

*No: 33179-Country: Iran*

*7- Construction of Hydrogen Gas Generator by using Anion Exchange Membrane and non-Precious Metals*

*No: 92179- Country: Iran*

*8- Development a Process for MEA Construction by Using Graphene Nano-particles in Decathlon Method*

*No: 88794-Country: Iran*