

Curriculum Vitae (summary)

Name: Soroush Mehdizadeh
Birthdate: 23/12/1991
Current residence: United Kingdom
Nationality: Iranian



OCCUPATION

KTP Associate, Aston University, United Kingdom

Process Engineer Developer, Qualitetch Component LTD, United Kingdom

Research topic: Developing and designing the novel filtration process to remove carbon particles from etching solution.

HIGHER EDUCATION QUALIFICATIONS

Ph.D., Materials Science and Engineering

Yamaguchi University, Japan, 2020

Thesis: Improving different aspect of reverse electrodialysis (RED) using ion exchange membrane in order to scaling up from lab-scale into pilot-scale.

M.Sc., Chemical Engineering (Process design) [GPA of 3.42 (out of 4.00)]

Sistan and Baluchestan University, Zahedan, Iran, October 2016.

Thesis: Steady State Simulation and Optimization of Alkylation Unit of Abadan Refinery.

B.Sc., Chemical Engineering [GPA of 3.28 (out of 4.00)]

Golestan University, Gorgan, Iran, September 2014.

CURRENT RESEARCH FIELD

- Membrane-based reverse electrodialysis (RED)
- Membrane-based filtration
- Wastewater treatment
- Ion exchange membrane fabrication

RESEARCH INTERESTS

- Reverse electrodialysis (RED)
- Direct methanol alkaline fuel cell (DMAFC)
- Membrane based filtration
- Wastewater treatment for NOM removing
- Membrane fabrication
- Oil and Gas refinery process simulation

CURRENT PROJECTS

- Process Development Engineer, Qualitetch Component Ltd, UK
- KTP Associate, Aston University, UK

CAREER AND PROJECT HISTORY

- Passing the training courses in SRU unit of Hasheminezhad gas refinery.
- Steady state simulation of Acetone production process using Aspen plus.
- Economical estimation of brine serum production.
- Grant-In-Aid for Scientific Research of Energy Using Innovative Technology, Okinawa, Japan.
- A Blue-energy Innovation Cluster from Salinity Gradient Energy-based Technologies for Blue-Energy Center Conception
- Development of High Efficient and High Stable Energy Conversion System from Salinity Gradient-Based Power Generation.
- Energy Recovery System Using Salty Wastewater in Industrial Plants by Reverse Electrodialysis (RED).
- Research of Factors Resulting in Performance Reduction of Reverse Electrodialysis (RED) in Sewage Treatment Plants.
- Development of strange ion-exchange membranes having nano-thickness with a $\square\Box$ structure for high-temperature reverse electrodialysis system

PUBLICATIONS

Journal articles

[7] Masahiro Yasukawa, **Soroush Mehdizadeh**, Tomoyuki Sakurada, Takakazu Abo, Masaya Kuno, and Mitsuru Higa, "Power generation performance of a bench-scale reverse electro dialysis stack using real wastewaters discharged from seawater reverse osmosis and sewage treatment plants," *Desalination*, DOI: <https://doi.org/10.1016/j.desal.2020.114449>

[6] **Soroush Mehdizadeh**, Masahiro Yasukawa, Tasma Suzuki, and Mitsuru Higa, "Reverse electro dialysis for power generation using seawater/municipal wastewater: Effect of coagulation pre-treatment," *Journal of Membrane Science*, DOI: <https://doi.org/10.1016/j.desal.2020.114356>.

[5] Mitsuru Higa, **Soroush Mehdizadeh**, Shiyang Feng, Nobutaka Endo and Yuriko Kakihana, "Cell Performance of Direct Methanol Alkaline Fuel Cell (DMAFC) Using Anion Exchange Membranes Prepared from PVA-Based Block Copolymer.," *Journal of Membrane Science*, DOI: <https://doi.org/10.1016/j.memsci.2019.117618>.

[4] **Soroush Mehdizadeh**, Masahiro Yasukawa, Takakazu Abo, Masaya Kuno, Yuki Noguchi and Mitsuru Higa, "The Effect of Feed Solution Temperature on the Power Output Performance of a Pilot-Scale Reverse Electro dialysis (RED) System with Different Intermediate Distance," *Membranes*, 9(6), 73, (2019). DOI: <https://doi.org/10.3390/membranes9060073>.

[3] **Soroush Mehdizadeh**, Masahiro Yasukawa, Masaya Kuno, Yoshihiro Kawabata and Mitsuru Higa, "Evaluation of Energy Harvesting from Discharged Solutions in Salt Production Plant by Reverse Electro dialysis (RED)," *Desalination*, 467, 95-102 (2019). DOI: <https://doi.org/10.1016/j.desal.2019.04.007>.

[2] **Soroush Mehdizadeh**, Masahiro Yasukawa, Takakazu Abo, Yuriko Kakihana and Mitsuru Higa, "Effect of Spacer Geometry on Membrane and Solution Compartment Resistances in Reverse Electro dialysis.," *Journal of Membrane Science*, 572, 271-280 (2019). DOI: <https://doi.org/10.1016/j.memsci.2018.09.051>

[1] **Soroush Mehdizadeh**, Farhad Shahraki, Kiyanoosh Razzaghi, Mir Mohammad Khalilipour, "Modeling and Optimization of Alkylation Process Using Response Surface Methodology.," *PETROLEUM RESEARCH*. 27, 82-95 (2017). DOI: [10.22078/pr.2017.756](https://doi.org/10.22078/pr.2017.756)

Short papers

[1] Takakazu Abo, **Soroush Mehdizadeh**, Yuriko Kakihana, Masahiro Yasukawa, Mitsuru Higa, "Power generation performance of a pilot-scale reverse electro dialysis (RED) stack.," *Bulletin of the Society of Sea Water Science, Japan*, accepted (2019).

Other prepared papers

[1] **Soroush Mehdizadeh**, Takakazu Abo, Masahiro Yasukawa, Yuriko Kakihana, and Mitsuru Higa, "Power generation performance of A 299 Cell Pair Pilot-Scale RED Stack with High Gross Power Density.," *Journal of Membrane science*.

CONFERENCES

- Reverse electro dialysis using seawater/municipal waste water: the effect of municipal waste water chemical pre-treatment by coagulant on RED power generation, *The 12th conference of the Aseanian Membrane Society*, AMS 12, July 2019, South Korea.
- Power generation performance of a 299 cell pairs pilot-scale RED stack with the highest gross power density in the world, *Japan Society of Sea Water Science Young Member, 10th Student Research Presentation (日本海水学会若手会 第10回学生研究発表会)*, March 2019, Nagasaki, Japan.
- Energy Harvesting from Discharged Solutions in Salt Production Plant by Reverse Electro dialysis (RED), *28th Annual Meeting of MRS-J*, December 2018, Kokura, Japan.
- Reverse electro dialysis (RED) system using wastewater from salt production plant, *Program of Membrane Symposium 2018*, November 2018, Kobe University, Japan.
- Applying reverse electro dialysis (RED) to harvest energy from discharge solution of salt plant, *The 5th Seawater-Life-Chemical Cooperation Symposium (第5回海水・生活・化学連携シンポジウム)*, October 2018, Ishinomaki Senshu University, Japan
- Effect of Spacer Geometry on Stack Resistance in Reverse Electro dialysis, *The 11th conference of the Aseanian Membrane Society*, AMS 11, July 2018, Australia.

- Effect of Spacer Geometry on Reverse Electrodialysis (RED) resistance, *The Fiber Society's Spring 2018 Conference*, June 2018, Japan.
- Reverse Electrodialysis (RED) power generation by mixing sea water and river water, *4th Program of International Platform on Ocean Energy for Young Researcher 2017*, Institute of Ocean Energy, Saga University (IOES), November 2017, Japan.

AWARDS

- Best presentation award of *Japan Society of Sea Water Science Young Member, 10th Student Research Presentation*, March 2019, Nagasaki, Japan.
- Award for Encouragement of Research in the 28th Annual Meeting of MRS-J Symposium.
- Outstanding Poster at The Fiber Society's Spring 2018 Conference, Japan.
- Best presentation award at 4th Program of International Platform on Ocean Energy for Young Researcher 2017, Institute of Ocean Energy, Saga University (IOES).

SKILL & EXPERTIES

Experimental

- Lab-scale and Pilot-scale RED setup
- RED performance measuring and characteristic
- Filtration process design and developing
- Membrane separation/filtration testing: Microfiltration (MF), Ultrafiltration (UF), Reverse osmosis (RO), Pressure retarded osmosis (PRO)
- Wastewater treatment
- PVA-based ion exchange membrane fabrication
- Ion exchange membrane characteristics: IEC, membrane potential, membrane resistance, mechanical strength, water uptake, and charge density.
- Ion chromatography, TOC, UV₂₅₄, turbidity, SEM, EDS, FTIR

Computational

- RED simulation
- Familiar with design of experiments and statistic analyzing program: Design expert, Minitab
- Oil & gas refinery simulation: Aspen plus, Aspen Hysys, Aspen dynamic, HYSYS, Aspen HX
- Familiar with modeling software: COMSOL, MATLAB
- Office tools

LANGUAGES SKILLS

- English (Fluent)
- Persian (Native)
- Japanese (Little)

REFERENCES

- Dr. Mitsuru Higa, (Ph.D. supervisor)
Graduate School of Science and Technology for Innovation, Yamaguchi University, Japan
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- Dr. Zhentao Wu
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- Dr. Masahiro Yasukawa (Ph.D. Co supervisor)
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