

Syed Abdullah Shah

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Education

Sogang University

M.S. IN MECHANICAL ENGINEERING

- GPA 3.90 / 4.3
- **Thesis Title:** Nanocomposite ion exchange membrane for reverse electro dialysis application.

Seoul, South Korea

March. 2018 - August 2020

International Islamic University

B.S. IN MECHANICAL ENGINEERING

- GPA 3.20 / 4
- **Major Courses:** Mechanics of Materials, Engineering Materials, Heat and Mass Transfer

Islamabad, Pakistan

Sep. 2011 - June. 2015

Work Experience

Sogang University

RESEARCH ASSISTANT (ENERGY ENGINEERING LABORATORY)

- Development of cation exchange membrane for reverse electro dialysis application
- Research paper/report writing
- Data collection and analysis in various ongoing projects
- Teaching assistant.

Seoul, South Korea

March. 2018 - Oct 2020

Projects

Nano Composite Ion Exchange Membrane For Reverse Electro dialysis Application (MS Thesis)

The objective of the thesis was to modified the cation exchange membrane for the reverse electro-dialysis (RED) system. The nanocomposite membrane was modified after the tuning the membrane was studied in deep detail with different characterization techniques (Raman spectroscopy, HR-TEM, FE-SEM, and AFM). Pure Nafion and Nafion based nanocomposite membrane as a cation exchange membrane with FAA-3 as an anion exchange membrane was implanted in RED device to investigate the electrical performance of the membrane with a various parameter, such as varying flow rate of the feed solution, applied current, channel thickness.

Study on dual electrochemical devices.

The objective of this work was to compare the performance of the developed polymer membrane in two different membrane-based electrochemical devices (Reverse electro dialysis and Fuel cell) as well as to reduce the cost of the membrane. The results are published in the reputed journal of ACS Sustainable Chemistry and Engineering.

Development of Electro-Membrane Technology for Hybrid Low Energy Desalination Plant Energy Recovery Process.

The objective of this project was to develop and modify cation exchange membrane for the reverse electro-dilysis application. The results are of this project are published in International Journal of Hydrogen Energy.

Effect of Different Salts on Reverse Electro dialysis performance.

The objective of this works is to investigate the pure monovalent and mixture of monovalent salts electrical performance for green energy generation. My responsibilities in this work performing the experiments.

Skills & Research Interests

Software MS OFFICE, Lab-view, LaTeX, Pro Engineering

Research Interests Climate technology, Water Treatment Process, Electrochemical Energy, Membrane Science, Ion Transport, Renewable Energy, Fluid Flow and Mass Transport.

Publications

- **Syed Abdullah Shah.**, Seung Young Choi, Sun-Min Cho, Majid Shahbabaie, Rahul Singh*, Daejoong Kim. "Modified single-Wall Carbon Nanotube for Reducing Fouling in Perfluorinated Membrane-based Reverse electro dialysis", International journal of Hydrogen energy (45 (2020) 30703-30719).
- Choi Seung Y, Prem P Sharma, **Syed Abdullah Shah.**, Rahul Singh*, Kim Daejoong, Jin Kyeong Sik, "Controlling fuel crossover in open electrochemical cells by tuning water nanochannel for power generation." ACS Sustainable Chemistry and Engineering. (2020, 8, 23, 8613–8623)
- Kim, Jihoon, Chul Woo Park, **Syed Abdullah Shah.**, and Daejoong Kim*. "A Study on Temperature Behaviour of Pulsating Heat Pipe with Different Diameter in Evaporator", Journal of The Korean Society of Visualization 17, No.1 (2019): 10-18.

Online Courses / Certifications

- Sustainable Development: The Water-Energy-Food Nexus by , **RWTH Aachen University**, Germany on edX (February 2020)
- Writing, Presenting and Submitting Scientific paper in English by, **Tsinghua university.**, China on edX (March 2020)
- Energy within Environmental constraints by , **Harvard University**, United State on edX (In Progress).

Academic Excellence

- Awarded Brain Korea-21 (BK-21) fellowship for the year 2018 to 2020, Republic Korea.
- Awarded Sogang global scholarship for the year 2018 to 2019 in faculty of Engineering and technology, Sogang university, Seoul, Republic of Korea.
- Best Research Assistance scholarship for the year 2019 from department of mechanical engineering, Sogang university, Seoul, Republic of Korea.
- Merit-Base Scholarship at International Islamic university, Islamabad.