Omid Babaie Rizvandi, Ph.D.

Postdoctoral Research Fellow

Faculty of Engineering and Natural Sciences (FENS), Sabanci University
Tuzla, Istanbul, 34956, Turkey

Email: omidbabaie@sabanciuniv.edu
Email: omidbabaie3620@gmail.com
Tel: (+90)5050744391

Education

Ph.D. in Mechatronics Engineering	Sept. 2016 to Jul. 2019	Sabanci University, Faculty of Engineering and Natural Sciences. Istanbul, Turkey *GPA: 3.75/4*
M.Sc. in Mechatronics Engineering	Sept. 2014 to Aug. 2016	Sabanci University, Faculty of Engineering and Natural Sciences. Istanbul, Turkey *GPA: 3.38/4*
B.Sc. in Mechanical Engineering	Sept. 2009 to Jul. 2014	University of Tabriz, Department of Mechanical Engineering. Tabriz, Iran *GPA: 3.85/4 – Ranked 1st*

Research Interests

- Proton Exchange Membrane Fuel Cell (PEMFC)
- Solid Oxide Fuel Cell (SOFC)
- Renewable and Sustainable Energy Systems
- Computational Fluid Dynamics (CFD)
- Finite Element Method (FEM)
- Biomechanics

Publications

Journal Papers	**Rizvandi, O. B.**, & Yesilyurt, S. (2019). A Pseudo Three-Dimensional, Two-Phase, Non-Isothermal Model of Proton Exchange Membrane Fuel Cell. Electrochimica Acta, 302, 180-197. **Rizvandi, O. B.**, & Yesilyurt, S. (2019). Modeling and Performance Analysis of Branched Microfluidic Fuel Cells with High Utilization. Electrochimica Acta, 318, 169-180.
Ongoing Journal Papers	**Rizvandi, O. B.**, & Yesilyurt, S. (2019). A Transient Pseudo-3D model of the PEM Fuel Cell for the Analysis of Dead-Ended Anode and Anode Bleeding Operation Modes. Manuscript is under review by the Electrochimica Acta. **Rizvandi, O. B.**, Murat Gokhan Eskin, & Yesilyurt, S. (2019). Numerical Modeling of Anode-Bleeding PEM Fuel Cells: Effects of Operating Conditions and Flow Field Design. Manuscript is under review by the Applied Energy.
Conference Proceedings	**Rizvandi, O. B.**, & Yesilyurt, S. (2019). Effects of PEM Fuel Cell Degradation on the Transport Properties of the Cathode Catalyst Layer. Energy Procedia, accepted. **Rizvandi, O. B.**, & Yesilyurt, S. (2018, June). Modeling of Flow Distribution in Proton Exchange Membrane Fuel Cell. In ASME 2018 16th International Conference on Nanochannels, Microchannels, and Minichannels (pp. V001T12A002-V001T12A002). American Society of

Mechanical Engineers.

Rizvandi, O. B., & Yesilyurt, S. (2016, July). Design of Anode Flow Channels and Headers for a Large PEMFC Operating at Ultra-Low Stoichiometric Flow Conditions at the Anode Exit. In ASME 2016 14th International Conference on Nanochannels, Microchannels, and Minichannels collocated with the ASME 2016 Heat Transfer Summer Conference and the ASME 2016 Fluids Engineering Division Summer Meeting (pp. V001T13A002-V001T13A002). American Society of Mechanical Engineers.

Yesilyurt, S., & **Rizwandi, O.** (2016, November). Design and optimization of anode flow field of a large proton exchange membrane fuel cell for high hydrogen utilization. In APS Meeting Abstracts.

Thesis

Ph.D. Development of In-Plane Models for the Analysis of Dead-Ended and Anode Bleeding Operation Modes and the Cell Degradation with Carbon Corrosion
Under supervision of **Prof. Serhat Yesilyurt**
Faculty of Engineering and Natural Sciences, Sabanci University

M.Sc. Design and Modeling of a Large Proton Exchange Membrane Fuel Cell with High Hydrogen Utilization for Automotive Applications
Under supervision of **Prof. Serhat Yesilyurt**
Faculty of Engineering and Natural Sciences, Sabanci University

B.Sc. Stress and Strain Analysis of a Rectangular Plate Under Torsion
Under supervision of **Prof. T. Navid**
Department of Mechanical Engineering, University of Tabriz

Other Projects

Mixed-Mode Bending (MMB), Ph.D.	Defining Modes I and II critical energy release, GIc and GIIc, of a Laminated Composite under Mixed-Mode Bending by Using Genetic Algorithm
Dielectrophoresis Cell Separation, Ph.D.	Numerical Analysis of Effect of Voltage, Frequency, and Flow Rate on Insulator-based Dielectrophoretic Separation of Live and Dead U937 Monocytes
Wind Turbine, M.Sc.	Design and Optimization of Horizontal Axis Wind Turbine Blade by Using Blade Element Momentum Method and Genetic Algorithm

Academic Work Experience

Teaching Assistant
1) Renewable and Sustainable Energy Systems (ME 420), Springs 2018 and 2019
2) Fluid Dynamics (ME 307), Falls 2017 and 2018
3) Mechanics (ENS 204), Summer 2018
4) Calculus II (MATH 102), Spring 2017, Falls 2014 and 2015
5) Control System Design (ME 303), Fall 2016
6) Systems Modeling and Control (ENS 206), Springs 2015 and 2016
Faculty of Engineering and Natural Sciences, Sabanci University

Teaching Assistant
1) Engineering Mathematics, Spring 2012, Falls 2011 and 2013
2) Vibration, Fall 2012
3) Fortran Programming, Spring 2012
Department of Mechanical Engineering, University of Tabriz

Teaching
1) Engineering Mathematics, Spring 2014
2) Static, Spring 2012
3) Differential Equation, Spring 2012

Department of Boniad Shahid, University of Tabriz

Academic Awards, Grants, and Achievements

2016 to 2018	Research Assistant Scholarship (Ph.D.) from Tubitak
2014 to 2016	Research Assistant Scholarship (M.Sc.) from Tubitak
2013	Offered to the Master Program for fall 2013 in the Faculty of Mechanical Engineering in University of Tabriz, Tabriz, Iran, entrance exam waived as an Award for being the top of my class (among about 100 students).
2012	Accepted as a member to the "Mechanical Engineering" Olympiad team of Tabriz University for nationwide competition Olympiad in Iran.
2009	Ranked in the top 1% of the participants in the nationwide university entrance examination in Mathematics and Physics fields for entering the undergraduate program among 350,000 Students.

Computer Skills

Engineering commercial software	COMSOL, ANSYS, FLUENT
Programming	MATLAB, FORTRAN
CAD and CAM software	CATIA, SOLIDWORKS

Language Skill

English: Fluent
Persian: Native

References

Prof. Serhat Yesilyurt
Email: syesilyurt@sabanciuniv.edu
Faculty of Engineering and Natural Sciences (FENS), Sabanci University
Istanbul, Turkey
Prof. Selmiye Alkan Gursel
Email: selmiye@sabanciuniv.edu
Faculty of Engineering and Natural Sciences (FENS), Sabanci University
Istanbul, Turkey
Prof. Meltem Elitas
Email: melitas@sabanciuniv.edu
Faculty of Engineering and Natural Sciences (FENS), Sabanci University
Istanbul, Turkey