

Omid Babaie Rizvandi

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Education

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

Research Interests

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

Thesis

- 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.

Research Experience

Research Assistant	Fall 2014 to Present	Flow field design, species transport, and liquid water analysis of PEM fuel cells. Under supervision of Prof. Serhat Yesilyurt . Faculty of Engineering and Natural Sciences, Sabanci University.
Research Assistant	Fall 2012 to Spring 2014	Linear elasticity (stress and strain) analysis of a rectangular plate with a hole in it under tension and torsion with FDM and FVM.

Under supervision of **Profs. T. Navid and S. E. Razavi**.
Department of Mechanical Engineering, University of Tabriz.
Velocity and pressure analysis of Taylor-Couette Stream.
Under supervision of **Prof. F. Tallati**.
Department of Mechanical Engineering, University of Tabriz.

Research Assistant Spring 2013

Publications

- Conference Proceedings**
- 1) **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.
 - 2) Yesilyurt, S., & **Rizvandi, 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.
 - 3) **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.
- Ongoing**
- 1) A Pseudo Three-Dimensional, Two-Phase, Non-Isothermal Model of Proton Exchange Membrane Fuel Cell, draft is under review by the Journal of Power Sources.
 - 2) Modeling and Performance of Branched Microfluidic Fuel Cells with High Utilization, draft is in submission process.

Other Projects

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

Academic Work Experience

- Teaching Assistant**
- 1) Mechanics (ENS 204), Summer 2018
 - 2) Renewable and Sustainable Energy Systems (ME 420), Spring 2018
 - 3) Fluid Dynamics (ME 307), Fall 2017
 - 4) Calculus II (MATH 102), Spring 2017, Fall 2015, and Fall 2014
 - 5) Control System Design (ME 303), Fall 2016
 - 6) Systems Modeling and Control (ENS 206), Spring 2016 and Spring 2015
- Faculty of Engineering and Natural Sciences, Sabanci University.
- Teaching Assistant**
- 1) Engineering Mathematics, Fall 2013, Spring 2012, and Fall 2011
 - 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 present** Full Tuition Award (Ph.D.), Sabanci University
- 2016 to present** Research Assistant Scholarship (Ph.D.) from Tubitak
- 2014 to 2016** Full Tuition Award (M.Sc.), Sabanci University
- 2014 to 2016** Research Assistant Scholarship (M.Sc.) from Tubitak (Ph.D.)
- 2013** Full-Entrance Tuition Award (M.Sc.), University of Tabriz
- 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 to 2014** Full Tuition Award (B.Sc.), University of Tabriz
- 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

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

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Prof. Selmiye Alkan Gursel

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

Email: selmiye@sabanciuniv.edu

Prof. Ahmet Onat

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

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