

SAJA AL-RIFAI

16120 SW 51st Street
Miramar, FL 33027

Cell: (305) 968-3419
Email: salri003@fiu.edu

Work Authorization: US citizen

SUMMARY

- Skilled **Mechanical Engineer** (B.Sc., M.Sc., & Ph.D.) as demonstrated by the successful accomplishment of multiple multidisciplinary Research projects focused on the modeling and simulation of a novel heat exchanger, swirl injector combustor, HVAC systems, ...etc.
- Experience in advanced **CFD and CAE engineering** and experimental design as evidenced by work in **ANSYS Fluent, LabVIEW, TRNSYS, SOLIDWORK, CAD design, ABAQUS.**
- A dedicated, fast-paced, and goal-oriented person who demonstrated strong work experience in both teamwork and an independent setup.

RESEARCH EXPERIENCE

- CFD Combustion Modeling of Swirler Injector for Disk-Oriented Engine Combustor (funded by Air force Institute of Technology AFIT).
- Numerical simulation, design, and optimization of cross flow Transport Membrane Condenser (TMC) based heat exchangers for industrial applications using CFD tools.
- Simulation and design of high-temperature and pressure flow in the shell and tube Transport Membrane Condenser (TMC) based heat exchangers.
- Multiphase modeling of heat and mass transfer in the TMC-based heat exchanger.
- Molecular dynamic simulation of multiphase flow inside nanoporous ceramic materials.
- Experimental and numerical modeling of HVAC systems for the cooling cycle of a solar thermal ejector.
- Performance study and optimization of an ejector cooling cycle under superheated primary flow for multiple variables, such as ejector geometry, refrigerant type, and operating condition.
- Thermodynamics analysis of cooling cycles.
- The design of a solar ejector cooling system using TRNSYS-EES.
- The design of an agricultural shredder - undergraduate graduation project.

WORK EXPERIENCE

- | | |
|--|---------------------|
| Postdoctoral Associate | 2022-Current |
| Florida International University, Miami, Florida | |
| ○ Research and Teaching Associate in Mechanical Engineering Department | |
| Project Manager | 2015 – 2022 |
| ALTEK Engineering, Miami, Florida | |
| ○ Design of residential HVAC system, Preparation of engineering drawings, and Preparation of engineering reports and calculations. | |
| Graduate Assistant | 2018 – 2022 |
| Florida International University, Miami, Florida: | |

SAJA AL-RIFAI

16120 SW 51st Street
Miramar, FL 33027

Cell: (305) 968-3419
Email: salri003@fiu.edu

- Research modeling, simulation and preparing research results for publications.
- Ran homework review sessions for different courses, Grading assignments, and monitoring exams. Proficient oral and written communication skills, exhibited by designing and conducting weekly lectures for different groups of students.

Teacher and Research Assistant **2012 - 2015**

Jordan University of Science and Technology, Irbid, Jordan:

- Teacher assistant for various courses such as: applied mathematics, heat transfer, fluid dynamics, thermodynamics, engineering drawing and AutoCAD.
- Research assistant for Ejector cooling cycle project funded by Scientific Research Support Fund, Jordan, through Grant No. ENE/02/02/2012.

Project manager **2008-2011**

Fastway Contracting Company, Irbid, Jordan:

- Supervising the maintenance technicians. Maintenance of Hospital systems and equipment such as the HVAC system, Boilers, and Fire alarm system.

EDUCATION

- | | | |
|---|-------------|--|
| Ph.D. Mechanical Engineering | 2022 | Florida International University |
| Dissertation: <i>Numerical Simulations and Modeling of Heat and Mass Transport in Membrane-Based Heat Exchangers.</i> | | |
| M.Sc. Mechanical Engineering - Renewable Energy and Sustainable Development | 2015 | Jordan University of Science and Technology |
| Thesis: <i>Modeling and Simulation of Solar Ejector Cooling System by Using TRNSYS Software.</i> | | |
| B.Sc. Mechanical Engineering - Field Power and Machinery | 2007 | Jordan University of Science and Technology |
| Graduation Project: <i>Modeling and Design of Agricultural Shredder.</i> | | |

LICENSING

- Florida Engineer Intern (License No.: 1100020531).

PUBLICATIONS - FULL LIST (GOOGLE SCHOLAR)

- **Saja Al-Rifai**, Cheng-Xian Lin, 2021, “Heat and Mass Transfer Correlations for Staggered Nanoporous Membrane Tubes in Flue Gas Crossflow”, Journal of Heat Transfer. Jun 2022, 144(6): 062702.
- **Saja Al-Rifai**, Cheng-Xian Lin, 2022, “Steady State Multiphase Modeling of Heat and Mass Transfer Inside Transport Membrane Condenser,” Proceedings of the 7th Thermal and Fluids Engineering Conference (TFEC), Partially Online Virtual and in Las Vegas, NV Conference, TFEC-2022- 40942.
- **Saja H. Al-Rifai**, Cheng-Xian Lin, Brian T. Bohan, Marc D. Polanka, 2021, “A Numerical Sensitivity Study of Modeling Parameters in the Combustion of a SWIRLER,” Proceedings of ASME Turbo Expo 2021, Virtual, GT2021-59392.

SAJA AL-RIFAI

16120 SW 51st Street
Miramar, FL 33027

Cell: (305) 968-3419
Email: salri003@fiu.edu

- Bourhan Tashtoush, Aiman Alshare, **Saja AL-Rifai**, 2015, “Hourly Dynamic Simulation of Solar Ejector Cooling System using TRNSYS for Jordanian Climate,” Energy Conversion and Management, Vol. 100, pp. 300-310.

AWARDS

- Three times awarded the Summer Research Fellowship-Summer Faculty Fellowship Program (SFFP). (Air Force Research Lab, Air Force Institute of Technology, AFIT, WPAFB) in (2020), (2021) and (2022).
- Doctoral Evidence Acquisition Fellowship award, (2021), Florida International University.
- Internship with International Institute for Industrial Environmental Economics IIIIEE through the EU project MANSUR-Lund University, Sweden (2013).

PROFESSIONAL MEMBERSHIPS AND SERVICES

- Member of the American Society of Mechanical Engineers (ASME).
- Member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).
- Board member of ASHRAE FIU Branch.
- Reviewer with ASME Journal of Heat Transfer.
- Reviewer with ASME's International Mechanical Engineering Congress & Exposition (IMECE).
- Volunteer to serve the community.

TECHNICAL & CORE COMPETENCIES

Engineering software:	Ansys Fluent (UDF/UDS programming), TRNSYS , Engineering equation solver (EES), Solidworks, MINITAB, MATLAB, ABAQUS, AUTOCAD, Pro/engineer, PVSOL, Tecplot, Paraview.
Numerical simulation skills:	Excellent knowledge in writing CFD code using: Finite Volume Method (FVM), Finite Difference Method (FDM), Control Volume Finite Element Method (CVFEM), Molecular Dynamic (LAMMPS), Artificial Neural Network/Python (ANN)
Programming:	FORTRAN, C/C++, MATLAB, and Python.
General Software:	Microsoft windows, Linux Ubuntu, Microsoft Office (Excel, Word, PowerPoint)
Languages:	English – Excellent proficiency. Arabic – Native or bilingual proficiency.
Soft skills:	Dedicated, Self-motivated, Creative, Team player, Collaborative, Leadership, Reliable, Analytical Skills, Problem solving skills, Flexible, Collaborator, Time management skills, Multifunctional, Decision-making skills.