

# Curriculum Vitae

## SEYED AMIRABBAS OLOOMI



### PERSONAL DETAILS

**Address** Department of Mechanical Engineering,  
Islamic AZAD University, Yazd Branch (IAUY), YAZD  
Iran

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### Summery

- ✓ More than 14 years of experience in university teaching (ranked first in student evaluations), research, and industry collaborations.
- ✓ More than 6000 students in Mechanical engineering, Electrical engineering (Thermodynamics), Civil Engineering (Fluid Mechanics), Textile Engineering (Thermodynamics, Fluid Mechanics, Heat Transfer), Polymer Engineering (Thermodynamics, Fluid Mechanics, Heat Transfer)
- ✓ Establishment of the field of Mechanical Engineering (BSc, MSc, PhD) in Islamic Azad university of Yazd
- ✓ Establishment of Thermodynamics Laboratory and Heat transfer Laboratory in Islamic Azad university of Yazd
- ✓ Selected as Top Researcher in Islamic Azad university of Yazd for several times
- ✓ Consultant of Yazd Combined Cycle Power Plant since 2016
- ✓ Investigator of the project "Optimization of Energy Consumption for Engineering Building in Islamic Azad University of Yazd"
- ✓ Executor of management and optimization of energy consumption in Yazd Rajaei Conservatory
- ✓ Chairman of the board of Behfam company in field of Pollutants Reduction and Energy Management
- ✓ Member of Publication Council of Islamic Azad University of Yazd
- ✓ Member of Educational and Research Council of Department of Mechanical Engineering since establishment

## EDUCATION

- 2004 – 2010     **Ph.D. in Fluid Mechanics Engineering**  
Dept. of Mechanical Engineering, Isfahan University of Technology.  
Subjects studied included: Advanced Mathematics II, Viscous Flow, Turbulent Flow, Hydrodynamics Instabilities, Radiation Heat Transfer, Boundary Layer, Advanced Gas Turbine, and Parallel Programming.  
Ph.D. thesis: "Parametric Study of Nanoscale Radiative Properties of Multilayer Structures"
- 2002 – 2004     **M.Sc. in Fluid Mechanics Engineering.**  
Dept. of Mechanical Engineering, Shahid Bahonar University of Kerman.  
Graduated with 2<sup>nd</sup> rank in class.  
Subjects studied included: Advanced Mathematics I, Numerical Methods, CFD, Conduction Heat Transfer, Convection Heat Transfer, Continuum Mechanics, Advanced Thermodynamics, and Advanced Fluid Mechanics.  
M.Sc. thesis: "Combination of Adaptive-grid Redistribution and Embedding Methods for Euler Equations"
- 1997 – 2001     **B.Sc. in Mechanical Engineering**  
Isfahan University of Technology, Isfahan  
Broad subjects studied in Solid and Fluid Mechanics and gained experience on the corresponding workshops and laboratories. As the final year project, I designed and manufactured Wire-Cut Feeding System.

## MEMBERSHIPS

- Member of Iranian Society of Nano Technology  
Member of Elite Society of Yazd  
Member of Iranian Society of Mechanical Engineers  
Member of board of directors at nanotechnology society of Islamic Azad University of Yazd

## WORK EXPERIENCE

- 2004-present     **Faculty Member**  
Department of Mechanical Engineering, Islamic AZAD University, Yazd Branch (IAUY), YAZD, Iran
- 2015-2016     **Head** of Mechanical Engineering Department  
2012-2015     **Head** of Mechatronic Engineering Department  
2007-2009     **Research Director**

## SKILLS

- **Programming** – well versed in Fortran 77/90, BASIC and MATLAB.
- **Computing** – I am proficient in the use of software packages in *PC* and *UNIX systems* including word processors (*MS Word*), graphics packages (*Tec plot* and *PowerPoint*), mathematical packages (*MATLAB*), statistical package (*Excel*) and

have a sound knowledge of *ANSYS Fluent Software, Design Builder Software and Thermoflow.*

- **Numerical methods** – use of various numerical approaches such as finite-difference, finite-volume, and finite-element with explicit and implicit time-marching methods for solving large sets of partial differential equations.
- **Communication** – I have made oral presentations at different conferences.
- **Languages** – English and Persian (Mother language)
- **Driving** – Full, clean, and current driving license

## REFEREES

Prof. Ahmad Sedaghat  
Mechanical Engineering Department,  
IUT,  
Isfahan, Iran  
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Prof. A. Saboonchi  
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Prof. M. Ameri  
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Department, UK,  
Kerman, Iran  
Email: ameri\_mm@uk.ac.ir

## RESEARCH PROJECTS

1. Effect of metal nanocoatings on the reflection and transmission coefficient and their comparison with non-metal coatings
2. Comparison between commercial microturbines in three-stage production systems and investigating the parameters affecting the efficiency of these systems
3. Prediction of radiative properties in multilayer periodic structure of semiconductors
4. Employing the direct search algorithm or the pattern algorithm to optimize the radiative properties of metal and non-metal nanocoatings.
5. Coating optimization to achieve appropriate optical properties in multilayer structures

## PROJECTS

1. Calculating the safety factor of rollers
2. Gearbox design
3. Numerical solution of hydrodynamic boundary layer in laminar flows
4. Numerical solution of parabolic partial differential equations (transient heat conduction)
5. Numerical solution of elliptical partial differential equations (Poiseuille flow in channels)
6. Numerical solution of viscous Burgers' equation
7. Investigating the effect of variations in the Péclet number on axial heat transfer
8. Comparison of network adaptation methods
9. Investigating turbulent boundary layer flow with wall modifications

10. Spectral analysis of turbulent flow in a tube bundle
11. Nano-scale investigation of radiation heat transfer
12. Simulation of water supply network in parallel programming

## **WORKSHOP ORGANIZER**

- Introduction on nanotechnology and its applications (Yazd Gas Company)
- Nano-scale heat transfer (Isfahan University of Technology)

## **PUBLICATIONS**

### **BOOKS (In Persian)**

1. Nano Scale Energy Transport (Vol. 1)
2. Optimization Algorithms (Vol. 1)
3. Nano Scale Energy Transport (Vol. 2)
4. Combined Heat and Power Generation
5. Optimization Algorithms (Vol. 2)
6. Power-Plants
7. Step-by-Step Practical FLUENT Tutorial

### **JOURNALS**

1. Oloomi S.A.A, Design of Thin Film's Geometry by Annealing Algorithm and Coherent Formulation, *ARPN Journal of Engineering and Applied Sciences*, 12(7), 2333-2337, 2017.
2. Omidpanah. M, and SAA Oloomi, Effects of Dopant Concentrations on Thin Films with Coherent Formulation at Visible Wavelengths, *Iranica Journal of Energy & Environment*, 3, 284-290, 2012.
3. Oloomi, A., Sabounchi, A., and Sedaghat, A., Effects of temperature on radiative properties of nanoscale multilayer with coherent formulation in visible wavelengths, *Iranian Journal of Mechanical Engineering* 11(2), 5-14, 2010.
4. Oloomi, A., Sabounchi, A., and Sedaghat, A., Effects of thin film thickness on emittance, reflectance and transmittance of nano scale multilayers, *International Journal of the Physical Sciences*, 5(5) 465-469, 2010.
5. Oloomi, A., Sabounchi, A., and Sedaghat, A., Parametric Study of Nanoscale Radiative Properties of Thin Film Coatings, *Nano Trends: A Journal of Nanotechnology and its Application*, 7(3) 1-7, 2009.
6. Oloomi S.A.A, Sabounchi, A and Sedaghat, A., Computing Thermal Radiative Properties of Nanoscale Multilayer, *World Academy of Science, Engineering and Technology*, 37,,929-934, 2009.
7. Oloomi S A A, and Ameri. M, Using Adaptive Meshing for Solving the Transonic Flow around Airfoils, *International Journal of Advanced Design and Manufacturing Technology*, 1(33), 55-64, 2008.
8. Ameri, M and Oloomi S A A, A Comparison of Adaptive-Grid Redistribution and Embedding With A Combination of These Two Methods, *Journal of Science & Technology, Transaction B, Engineering*, 31(B1), 1-12, 2007.
9. Noorian Ardakani, M, Oloomi S A A, and M. H. Zare Mirok Abad, Investigation on Aspect Ratio and Nanoparticles of Nano-fluid Flow in Rectangular

- Channels, *Journal of Mechanical Engineering, Tabriz*, 48(1), 361-365, 2018. (In Persian)
10. Khorshidian, M, Oloomi S A A, Mirjalili, S A A, and Negahi, A H, Numerical Study of the Natural Convection Flow of the Nanofluid in a Ring Cavity, *Journal of Energy Conversion*, Accepted. (In Persian)
  11. Dabiri M A, Oloomi S A A, and Mirjalili, S A A, Numerical Study of Bag Filters in Cement Factories, *Journal of Energy Conversion*, Accepted. (In Persian)
  12. Afroozi M, Oloomi S A A, and Negahi, A H, Numerical and Analytical Study of Turbulent Flow Over an Airfoil at Different Angles to Optimize the Angle of Attack and Stall, *Journal of Energy Conversion*, Accepted. (In Persian)
  13. Sheibani A R, and Oloomi S A A, The Effects of Nanofluid in Mixed Heat Transfer in Localized Ventilated with Ventilation Compartment, *Journal of Mechanical Engineering, Transactions of The ISME*, Accepted. (In Persian)
  14. Moravej M R, Mazidi, M and Oloomi S A A, The Impact of Nanoparticles Type and Cross Section Area on Nanofluids Forced Convection Heat Transfer Coefficient, *Journal of new technologies in energy systems*, Accepted. (In Persian)
  15. Nozarpour P, Oloomi S A A, Mirjalili, S A A and Negahi, A H, Comparison of Triangular and Semicircular Barriers on Combustion Quality in a Micro-Combustion Chamber, *Journal of new technologies in energy systems*, 3(1), 37-50, 2017. (In Persian)
  16. Golshan A, Oloomi S A A, and Mirjalili, S A A, Optimization Design of Thin Film Solar Cells for Nano-Area Applications at Visible Wavelength, *Journal of Applied Mechanical Research*, 8(3), 18-27, 2017. (In Persian)
  17. Shokoohi Bafghi A., and Oloomi S A A, Numerical Investigation of Influence Conductivity and Convection Heat Transfer Compound non-Newtonian Fluid Different Gradient the Temperature inside the Chamber, *Journal of Applied Mechanical Research*, 8(3), 12-17, 2017. (In Persian)
  18. Khani Esfand Abad N., Oloomi S A A, and Mirjalili, S A A, The Effect of Metallic and Non-metallic Nano-coatings and Polarization of Incident Radiation on Radiation Properties of Nono-coatings, *Journal of Applied Mechanical Research*, 8(2), 3-8, 2016. (In Persian)
  19. Negahi A H., and Oloomi S A A, Numerical Investigation of Heat and Fluid Flow in a Ventilated Cavity with Nanofluids Using Two-phase Mixture Model, *Journal of Applied Mechanical Research*, 8(1), 3-18, 2016. (In Persian)
  20. Khaluei A., Oloomi S A A, and Mirjalili, S A A, Effects of Nanofluids on the Temperature and Velocity of the Flow in a Flat Plate Solar Thermosiphon Collector, *Journal of Applied Mechanical Research*, 8(1), 33-40, 2016. (In Persian)

## CONFERENCE

1. Oloomi, A., Saboonchi, A., Sedaghat, A., Effects of Donors and Acceptors on Radiative Properties of Nanoscale Multilayer Structures at Infrared Wavelengths, 6th WSEAS International Conference on APPLIED and THEORETICAL MECHANICS (MECHANICS '10), ATHENS, Greece, 2010.
2. Oloomi, A., Saboonchi, A., Sedaghat, A., Effects of Incidence Angle on Thermal Radiative Properties of Nanoscale Semiconductors, 6th WSEAS International Conference on APPLIED and THEORETICAL MECHANICS (MECHANICS '10), ATHENS, Greece, 2010.
3. Oloomi, A., Saboonchi, A., Sedaghat, A., Effects of Dopant Concentrations on Radiative Properties of Nanoscale Multilayer with Incoherent Formulation for

- Visible Wavelengths, National Conference in Chemical Engineering, Islamshahr, 2010.
4. Oloomi, A., Saboonchi, A., Sedaghat, A., Effects of Thin Film Coatings on Radiative Properties of Nanoscale Multilayer in Infrared Wavelengths, National Conference in Chemical Engineering, Islamshahr, 2010.
  5. Oloomi, A., Saboonchi, A., Sedaghat, A., Effects of Dopant Concentrations on Radiative Properties of Nanoscale Multilayer with Incoherent Formulation for Infrared Wavelengths, 1st Conference on Mathematics and its Applications in Engineering Sciences, Jouybar, 2010.
  6. Oloomi, A., Saboonchi, A., Sedaghat, A., Predict Thermal Radiative Properties of Nanoscale Multilayer Structures, International Conference Nanotechnology and Applications, NANO 2008, ATHENS, Greece, 2008.
  7. Oloomi, A., Saboonchi, A., Sedaghat, A., Computing Thermal Radiative Properties of Nanoscale Multilayer, ICMSSC 2009, Dubai, United Arab Emirates, 2009.
  8. Oloomi, A., Saboonchi, A., Sedaghat, A., Thermal Radiative Properties of Nanoscale Multilayer Structures, 2nd International Congress on Nanoscience & Nanotechnology, Tabriz, Iran, 2008.
  9. Oloomi, S.A.A, Sabounchi, A and Sedaghat, A., (2010), Effects of Thin Film Coatings on Radiative Properties of Nanoscale Multilayer in Infrared Wavelengths, *National Conference on Chemical Engineering*, pp. 1-15.
  10. Oloomi, S.A.A, Sabounchi, A and Sedaghat, A., (2010), Effects of Dopant Concentrations on Radiative Properties of Nanoscale Multilayer with Incoherent Formulation for Infrared Wavelengths, *Conference on Mathematics and its Applications in Engineering Sciences*, pp. 1-6.
  11. Oloomi, S.A.A, Sabounchi, A and Sedaghat, A., (2010), Effects of Dopant Concentrations on Radiative Properties of Nanoscale Multilayer with Incoherent Formulation for Visible Wavelengths, *National Conference on Chemical Engineering*, pp. 1-14.
  12. Oloomi, S.A.A, and Ameri, M. (2005) "Comparison of Adaptive-grid Redistribution, Embedding and Combination of Them for Solution of Euler Equations", Isfahan.

#### **NATIONAL CONFERENCES PAPERS (IN PERSIAN)**

1. Effect of non-polarized rays and metal nano-coatings on the emission intensity of silicon glasses
2. Coating optimization using Genetic Algorithm to achieve optical properties appropriate for multilayer structures
3. Effect of polar radiation angle on the nano-coatings
4. Optimization of the geometry and position of thin layers using the annealing algorithm
5. Fuzzy control of dynamic motion of a chain robot on a discrete path and improving the control method to achieve an intelligent robot for real-world conditions.
6. Effect of Reynolds number on the streamlines inside a cavity by assuming a heat transfer condition
7. Increasing the absorption efficiency of solar cells using oxide nano-coatings
8. Simulating the left part of the human heart and the wall-blood interactions in this part
9. Numerical investigation of methane-air combustion in a micro-chamber in presence of a triangular obstacle for stabilization of the flame

10. Numerical investigation on the effect of geometric shape of the obstacle used for stabilization of methane-air flame in a micro-chamber
11. Modeling building ventilation using solar chimney and investigating the effect of chimney height
12. Modeling building ventilation using solar chimney and investigating the effect of chimney depth
13. Effect of chevron angle on distribution of temperature and pressure in the flat (compact) heat exchanger
14. Effect of nanoparticle concentration on the pressure drop of the nanofluid flow in a pipe with rectangular cross-section
15. Effect of dimensional ratio on the heat transfer of nanofluid flow in a pipe with rectangular cross-section
16. Effect of convective ventilation system and movement of particles on the human breath
17. Effect of variation of Reynolds number on the Nusselt number at a fixed volumetric fraction in a double-pipe heat exchanger with water/aluminum oxide and oil/aluminum oxide as the nanofluids
18. Optimization of movement control of pieces in Draughts using adaptive neuro fuzzy inference system
19. Employing fuzzy logic to mathematically infer the position of pieces in Draughts

#### **M.SC. THESIS SUPERVISED**

1. Simulation of flow around locomotives and the effect of turbocharger exhaust gases and air flow profile on the filtration and cooling systems
2. Numerical simulation of flat plate solar collectors in Rafsanjan
3. Numerical investigation of nanofluid mixture heat transfer inside a chamber equipped with ventilation and horizontal heat source
4. Simulation of flows entering waste heat boilers and optimization of flow distribution using flow modifier device
5. Simulation of flow around locomotives and the effect of turbocharger exhaust gases and air flow profile on the filtration and cooling systems
6. Investigating the temperature criterion and heat stresses in operation of E-Type steam turbines in combine-cycle power-plant of Shirkooh in Yazd and assessing its optimization approaches
7. Investigating the reasons for the reduced efficiency of process gas blowers at direct reduced iron factories
8. Investigating the performance of ice cooling systems on gaseous generator of powerplants and its comparison with similar systems
9. Simulation and investigation of different parameters of non-Newtonian fluid flows between eccentric rotating bearings from a temperature perspective and calculation of Nusselt number using FLUENT
10. Appropriate methods for optimization of energy consumption at the building of engineering department in Islamic Azad University of Yazd
11. Effect of air conditioning system on the breathing process by taking into account the effect of haze
12. Optimization of plate-fin compact heat exchangers and their comparison with compact tube heat exchanger

13. Exergy analysis and optimization of a combined-cycle power-plant and investigation of the effect of design parameters on the power-plant performance
14. Simulation of two-phase nanofluid flows inside a chamber in presence of ventilation
15. Design and simulation of solar water heating using flat collectors under Yazd weather conditions
16. Simulation of solar tower using FLUENT and obtaining its optimal conditions
17. Simulation of flow around locomotives and the effect of turbocharger exhaust gases and air flow profile on the filtration and cooling systems
18. Numerical simulation of flat plate solar collectors in Rafsanjan
19. Numerical investigation of nanofluid mixture heat transfer inside a chamber equipped with ventilation and horizontal heat source
20. Simulation of the flow entering waste heat boilers and optimization of flow distribution using flow modifier device
21. Optimal radiative properties of metal nano-coatings using imperialist competitive algorithm
22. Optimization of properties of non-metal multilayer structures using ant colony optimization algorithms
23. Design and simulation of hybrid transport and exploration robots in dangerous environments
24. Optimal radiative properties of metal nano-coatings using imperialist competitive algorithm
25. Optimization of properties of non-metal multilayer structures using Hill climbing algorithm
26. Design and modeling of drilling constraints for dental implants
27. Optimization of the radiative properties of non-metal nano-coatings using simulated annealing
28. Thermal analysis of exhaust manifold
29. Effect of air conditioning system on the breathing process by taking into account the effect of haze
30. Optimization of plate-fin compact heat exchangers and their comparison with compact tube heat exchanger
31. Numerical investigation of the effect of different aspect ratios of heat sources on the streamline and temperature in a square chamber
32. Numerical investigation of the effect of nanofluids on the convective heat transfer in a ventilated chamber with local heating
33. Investigation of nanofluid heat transfer inside a chamber containing a heat source
34. Effect of non-metal oxides on the efficiency of solar cells
35. Effect of polarization of the input rays on the radiative properties of thin layers
36. Effect of thickness and number of thin silicon layers on the reflection, transmission, and absorption coefficients of multilayer structures
37. Optimization of energy consumption of buildings using thin coating layers in silicon glasses
38. Simulation of two-phase nanofluid flows inside chambers with ventilation
39. Exergy analysis and optimization of a combined-cycle power-plant and investigation of the effect of design parameters on the power-plant performance
40. Comparison of performance of solar absorption refrigeration system with different collectors under Yazd weather conditions



41. Analysis of direct-heating furnace at the Sarvestan oil processing unit by emphasizing on energy management and analysis using FLUENT
42. Investigation of the factors affecting heat transfer by using nanofluid as coolant in heat exchangers
43. Comparison of flow and heat flux in channels with triangular and trapezoidal cross-sections using numerical methods
44. Effect of Meybod weather conditions on solar chimneys with different geometric parameters
45. Performance simulation of air-cooled systems in Yazd power-plant using aco+ software
46. Simulation of solar tower using FLUENT and obtaining its optimal conditions
47. Simulation of flow around locomotives and the effect of turbocharger exhaust gases and air flow profile on the filtration and cooling systems
48. Improving the efficiency of thin-walled solar cells using Genetic Algorithm
49. Investigating the temperature criterion and heat stresses in operation of E-Type steam turbines in combine-cycle power-plant of Shirkooh in Yazd and assessing its optimization approaches
50. Simulation of flow inside exhaust pipe
51. Thermodynamic analysis of Ansaldo unit of the combined power-plant and investigating parameters affecting efficiency
52. Thermodynamic analysis of Craft unit of the combined power-plant and investigating parameters affect efficiency
53. Numerical solution of the exponential function governing heat transfer of non-Newtonian fluids in an asymmetric chamber under different inclination angles
54. Numerical investigation of heat transfer in an open square chamber filled with nanofluid by taking into account artificial roughness
55. Thermodynamic analysis of Ramin steam power-plant by employing a waste heat boiler and assessment of the factors affecting efficiency
56. Auditing and optimization of energy consumption for the building of Shahid Rajaei vocational school in Yazd
57. Numerical study of forced convection in a channel in parallel to discrete heat sources
58. Investigating the reasons for the reduced efficiency of process gas blowers at direct reduced iron factories
59. Numerical study of heat transfer of nanoparticles with different volumetric fractions in a the cooling system of towboats at Bandar-e Emam Khomeyni
60. Calculating the capacities of heating and cooling air handlers (coils) as well as the amount of air required for clean rooms with different classes
61. Numerical investigation of flow and heat transfer in a channel with gradual planar expansion
62. Effect of solar chimney on the ventilation of a building in Tabas
63. Numerical and analytical investigation of turbulent and laminar flows on an airfoil under different attack angles and optimization of the stall angle
64. Design of Heliostat field for a central receiver power-plant under Yazd weather conditions
65. Thermodynamic analysis of a combined heat and power (CHP) based on the organic Rankine cycle using the solar energy at a domestic scale

## **COURSES**

Thermodynamics (I&II), Heat Transfer (I&II), Fluid Mechanics (I&II), Convection Heat Transfer, Conduction Heat Transfer, Advanced Fluid Mechanics, Advanced Thermodynamics, Gas Turbines.

**REASERCH INTERESTS**

Energy Management

Energy Optimization

Renewable Energy Applications

Zero Energy Building

Carbon Management

Power Plants Optimization

Thin Film Properties