



Omid Ghaffarpasand

Curriculum Vitae

Date of Birth: Feb. 25th 1983,
Married without child (Jan. 1st 2007).
Graduated on June 2012

Education

- 2007–2012 **Ph.D. of Aerosol Physics**, *University of Isfahan*, Isfahan, Iran.
- 2004–2006 **Masters of Solid State Physics**, *University of Isfahan*, Isfahan, Iran.
- 2000–2004 **Bachelor of Atomic Physics**, *University of Isfahan*, Isfahan, Iran.

PhD Thesis

- Title *The Dynamics of Brownian Motion of Atmospheric Nano-Aerosols in a Cylindrical Tube*
- Supervisors Professor Smaeyl Hasanzadeh, Professor Stephan Borrmann & Associate Professor Fahimeh Hosseinibalam
- Description In this study, in addition to survey of the different nanoparticles producing methods we develop, analyze and implement a number of new numerical and experimental methods to investigate the motion of aerosols with various sizes in different flows. The experimental part of the thesis was performed at Max-Planck Institute for Chemistry in Mainz, Germany, while the numerical part of the study was done in Sapienza University of Rome, Italy.

Masters Thesis

- Title *Preparation of $LiMn_2O_4$ Nanoparticles with Mechanochemical and Mechanical Alloying Methods and Investigation of Their Electrical Conductivity*
- Supervisors Professor Jamshid Amighian & Associate Professor Morteza Mozafari

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Description This thesis explored the new method in preparation of $LiMn_2O_4$ spinel oxide as the positive electrode materials in rechargeable lithium batteries. The electrical conductivity of the spinel material in addition of the other physical properties were characterized and measured during the study.

Research Interests

- ◇ Numerical and experimental investigations of multi-phase flow systems with focusing on nanoparticles propagation through various flow regimes based on either DNS or LES methods
- ◇ Aerosol science and technology in measuring aspects, new characterization methods, speciation, and forecasting models
- ◇ Numerical analysis of magnetohydrodynamic (MHD) convection of nanofluids in either porous or normal medium
- ◇ Computational fluid dynamics with focusing on nanoparticles behaviour in Turbulent flow

International Awards and Collaborations

- 2010 **Fellowship**, AEROSPACE DEPARTMENT, SAPIENZA UNIVERSITY OF ROME, Rome, Italy.
Learning and Developing of new CFD techniques in numerical simulations of ultrafine aerosol propagation within the turbulent fluid flows.
- 2010 **Grant under TRIL project**, INTERNATIONAL CENTER OF THEORETICAL PHYSICS, ICTP, Trieste, Italy.
- 2011 **Sabbatical period**, MAX-PLANCK INSTITUTE FOR CHEMISTRY, Mainz, Germany.
Designing and developing of new experimental set-ups in the measuring of penetration efficiencies of ultrafine aerosol particles in a tube under turbulent flow conditions.
- March-April **Receive Training**, MAX-PLANCK INSTITUTE FOR CHEMISTRY, Mainz, Germany.
- 2016 Designing and developing of a new package for simultaneously and continuously measuring size distribution and particle number concentration of urban aerosols with size range 10 nm to 30 μ m.
- June 2017 **Keynote Speaker**, OPEN UNIVERSITY, Mylton Keynes, UK.
Air pollution in Iran metropolises, solutions and challenges.
- December 2017 **Main proposer**, ALBA SYNCHROTRON CENTER, Barcelona, Spain.
Speciation and characterization of urban aerosol particles sampled from the greater Isfahan.

Publications and Conference Presentation

Publications

- 2011 **Fahimeh Hosseinibalam, Smaeyl Hasanzadeh, Omid Ghaffarpasand, "The effects of different SDE calculus on dynamics of nano-aerosols motion in two phase flow systems"**, *International Journal of Nanoscience and Nanotechnology*, **7**, 35-47, (2011).
- 2012 **Omid Ghaffarpasand, Frank Drewnick, Fahimeh Hosseiniebalam, Stephane Gallavardin, Johannes Fachinger, Smaeyl Hassanzadeh, Stephan Borrmann, "Penetration efficiency of nanometer-sized aerosol particles in tubes under turbulent flow conditions"**, *Journal of Aerosol Science*, **50**, 11-25, (2012).
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- 2013 Fahimeh Hosseinibalam, Smaeyl Hasanzadeh, Omid Ghaffarpasand, "Dispersion and deposition mechanisms of particles suspended in a turbulent plane Couette flow ", *Applied Mathematical Modelling*, **34**, 2417-2429, (2013).
- 2014 Omid Ghaffarpasand, Fahimeh Hosseinibalam, Smaeyl Hasanzadeh, "Dispersion of suspended aerosols in a turbulent flow", *J. Earth and Space Physics*, **40**, 169-180, (2014).
- 2015 Fahimeh Hosseinibalam, Omid Ghaffarpasand, "The effects of emission sources and meteorological factors on sulphur dioxide concentration of Great Isfahan, Iran" *Atmospheric Environment*, **100**, 94-101, (2015).
- 2016 Omid Ghaffarpasand, "Conjugate effect of Joule heating and unsteady MHD natural convection in a differentially heated skewed porous cavity saturated by Cu-water nanofluid", *Journal of Applied Fluid Mechanics*, **9**, 2823-2836, (2014).
- 2016 Omid Ghaffarpasand, "Numerical study of MHD natural convection inside a sinusoidal heated lid-driven cavity filled with Fe₃O₄-water nanofluid in the presence of Joule heating", *Applied Mathematical Modelling*, **40**, 9165-9182 (2016).
- 2017 Omid Ghaffarpasand, "Natural convection and entropy generation of ultrafine atmospheric aerosols in presence of hydrodynamic partial slip and thermal radiation due to solar energy", *Scientia Iranica F*, **24**, 1686-1705 (2017).
- 2017 Omid Ghaffarpasand, and Mohsen Mohebinejad, "The comparison of double-diffusive mixed convection in square driven cavities with one and two moving lids ", *Iranian Journal of Physics Researches*, **17(3)**, 443-456 (2017).
- 2017 Omid Ghaffarpasand, "Effect of alternating magnetic field on unsteady MHD mixed convection and entropy generation of ferrofluid in a linearly heated two-sided cavity", *Scientia Iranica B*, **24**, 1108-1125 (2017).
- 2017 Omid Ghaffarpasand, "Massline visualization of double-diffusive natural convection inside a cavity filled with nanofluid subjected to heat flux and transverse magnetic field", *Journal of Applied Fluid Mechanics*, **10**, 1427-1440 (2017).
- 2017 Amirreza Talaiekhosani, Omid Ghaffaroasand, Mohammadreza Talaei, Neda Neshat, and Behnam Eydivandi, "Evaluation of emission inventory of air pollutants from rail road and air transportation in Isfahan metropolitan in 2016", *J. Air Pollution Health*, **2**, 1-18 (2017).
- 2018 Omid Ghaffarpasand, "Characterization of unsteady Thermo-Solutal convection flow with Soret and Dufour effects in a square enclosure with top moving wall", *J. Heat and Mass Transfer Research*, Available On-line, DOI: 10.22075/jhmtr.2017.880.1062 (2018).
- 2018 Omid Ghaffarpasand, "Unsteady double-diffusive natural convection with Soret and Dufour effects inside a two-sided lid-driven skewed enclosure in the presence of magnetic field", *Scientia Iranica*, Accepted In Press (2018).

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- 2018 **Omid Ghaffarpasand, and Dariush Fazeli, "Numerical examination of MHD mixed convection flow and heat transfer of nanofluid in parallelogramic porous enclosure with magnetic field induction ", Scientia Iranica, Accepted In Press (2018).**

Oral Presentations

- 2012 **O. Ghaffarpasand, F. Hosseiniebalam, S. Hassanzadeh, and S. Borrmann, Nanoparticle penetration efficiency in circular cross-section coils under turbulent flow condition, International Congress on Nanoscience & Nanotechnology (ICNN2012) 8 - 10 September 2012, Kashan, I. R. Iran.**
- 2014 **O. Ghaffarpasand, F. Hosseiniebalam, S. Hassanzadeh, Effective factors of ozone and nitrogen oxides concentration in Isfahan atmosphere, Physics Conference of Iran, (2014).**
- 2015 **O. Ghaffarpasand, M. Mohebi, The comparison of double-diffusive mixed convection in square driven cavities with one and two moving lids, Physics Conference of Iran, (2015).**

Finalized and In Processing Research Projects

- 2012 **Research Project, Omid Ghaffarpasand & Morteza Mozafari, Feasibility Study of Needle Coke Preparation for Fabricating Graphite Electrodes, Mobarakeh Steel Company.**
Isfahan, Iran.
- 2013 **Research Project, Omid Ghaffarpasand & Morteza Mozafari, Preparation of needle coke for fabrication of graphite electrodes and study its physico-chemical properties, Mobarakeh Steel Company.**
Isfahan, Iran.
- 2015 **Research Project, Omid Ghaffarpasand & Smaeyl Hasanzadeh, The investigation of Environmental dust effects on the respiratory system of Mobarakeh steel company staff, Mobarakeh Steel Company.**
Isfahan, Iran.
- 2017 **Research Project, Omid Ghaffarpasand, Design and set-up of Mobile Laboratory for Aerosol Study (MLAS), www.mlasui.ir, Isfahan Department for Environment.**
Isfahan, Iran.
- 2017 **Research Project, Omid Ghaffarpasand, Amir Sayad Hassan Rozatian, Mohammad Khodadai, Multi-elemental characterization of atmospheric aerosols in the greater Isfahan using Synchrotron radiation total reflection X-ray fluorescence, ALBA synchrotron center and Iranian Light Source Facility (ILSF).**
Barcelona, Spain and Tehran, Iran.
- 2017-2018 **Research Project, Mohamadreza Talaei, Omid Ghaffarpasand, Amirreza Talalei, & Hossein AhmadiKia, Sources apportionment and emission inventory of the gas pollutants of Isfahan metropolitan area, Isfahan Municipality.**
Isfahan, Iran, In Process.

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Teaching Experience and Academic status

2013–present **Assistant Professor** , PHYSICS DEPARTMENT, UNIVERSITY OF ISFAHAN, Isfahan, Iran.

2017–present **Head** , RESEARCH GROUP OF AIR POLLUTION AND SOLID WASTE MATTER, ENVIRONMENTAL RESEARCH INSTITUTE, UNIVERSITY OF ISFAHAN, Isfahan, Iran.

Detailed Courses:

- **Bachelor** Fundamental Physics, Laboratories of Basic and Modern Physics. Statistical mechanics, Thermodynamics, Heat transfer Physics, Modern Vacuum Physics
- **Master** Advanced Statistical Mechanics and Physics
2005–2012 **Teacher Invited** , VARIOUS DOMESTIC UNIVERSITIES OF ISFAHAN, Isfahan, Iran, Different courses in Bachelor of physics.

Supervision OF Thesis

2017 **Master Thesis**, *Dariush Fazeli*, Large Eddy Simulation of turbulent flow in marine atmospheric boundary layer of north zone of Persian Gulf and study of the physical properties.

Computer skills

- **Operating systems** Advanced experience with the most flavors of Linux, Ubuntu, and Microsoft Windows and to some extent Mac OS
- **Programming languages** $\text{\LaTeX}2_{\epsilon}$ (advanced), MATLAB (advanced), and Fortran (seldomly)

Interests

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| - Hiking | - Film-goer |
| - Cooking | - Swimming |
| - Running | - Volleyball |

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