

# Aram Parsa, Ph.D., P.Eng.

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## EDUCATION

- 2007 – 2012     **Doctor of Philosophy** in Mechanical Engineering  
Department of Mechanical and Industrial Engineering,  
Ryerson University, Toronto, Canada
- 2004 – 2005     **Master of Applied Science** in Mechanical Engineering  
Department of Mechanical Engineering  
University of Liverpool, Liverpool, UK
- 1996 – 2001     **Bachelor of Applied Science** in Mineral Engineering  
Department of Mineral Engineering  
Tehran Azad University, Tehran, Iran
- 1994 – 1996     **Pursued Bachelor of Applied Science** in Shipbuilding Engineering  
Department of Mechanical and Shipbuilding Engineering  
Amir kabir University, Tehran, Iran

## SKILLS AND QUALIFICATIONS HIGHLIGHT

- Engineering expertise in fluid mechanics, thermodynamics, heat transfer, computational fluid dynamics (CFD), machine design, stress analysis, finite element analysis (FEA)
- Six years research experience during MASc and PhD projects and studies
- Seven years industrial experience in well-known EPC/EPCM engineering companies
- Experienced in large industrial projects in oil & gas (Refinery, Gasification, Synthetic Gas), petrochemical (HDPE, Urea & Ammonia), nuclear (Power Plant), and mineral (Iron, Chrome)
- Knowledge of standards and codes including ASME, ANSI, ASTM, API, CEMA, CMAA
- Professional organization membership: ASME, AIAA, CIM, PEO
- Knowledgeable in engineering, design, analysis and other software including Ansys, Fluent, MSC Patran/Nastran, HyperWorks, Matlab, Mathematica, Mathcad, Simulink, Solid Edge, Pro-E, AutoCAD, Solid Works, Micro-Station, MS Project, and MS Office

## ACADEMIC GRANTS, SCHOLARSHIPS AND AWARDS

- 2008 – 2011     Ryerson Graduate Scholarship, Ryerson University
- 2009 – 2010     MITACS Accelerate Scholarship
- 2008 – 2010     Ryerson International Student Scholarships for Engineering Doctoral Students, Ryerson University
- 2008 – 2010     Access to Opportunity Program award for Engineering Doctoral Students, Ryerson University
- 2010             CSA grant for IAC2010 Conference

## TEACHING EXPERIENCES

Fall 2015	<b>Statics</b> Point Park University, Natural Science and Engineering Technology Department
Fall 2015	<b>Dynamics</b> Point Park University, Natural Science and Engineering Technology Department
Fall 2015	<b>Properties of Materials</b> Point Park University, Natural Science and Engineering Technology Department

*Supervised laboratories and performed tutorial sessions in the following undergraduate courses:*

Winter 2008	<b>Stress Analysis</b> Ryerson University, Mechanical Engineering Department
Fall 2008 & 2010	<b>Fluid Mechanics I</b> Ryerson University, Mechanical Engineering Department
Winter 2009 & 2010	<b>Fluid Mechanics II</b> Ryerson University, Mechanical Engineering Department
Winter 2010 & 2011	<b>Heat Transfer</b> Ryerson University, Mechanical Engineering Department
Winter 2011	<b>Thermodynamics</b> Ryerson University, Mechanical Engineering Department
Summer & Fall 2011	<b>Numerical Analysis (MATLAB)</b> Ryerson University, Mathematics Department
Fall 2011	<b>Calculus I</b> Ryerson University, Mathematics Department

## PUBLICATIONS

- ❖ Parsa, A. and M. Z. Saghir, “Fluid flow behavior of a binary mixture under the influence of external disturbances using different density models”  
Journal of Fluid Dynamics and Material Processing, 2011  
(vol.8, no.1, pp.27-49, 2011)
- ❖ Parsa, A., S. Srinivasan and M. Z. Saghir, “Impact of density gradients on the fluid flow inside a vibrating cavity subjected to Soret effect”,  
The Canadian Journal of Chemical Engineering, 2012  
(Volume 91, Issue 3, pages 550–559, March 2013)
- ❖ Parsa, A. and M. Z. Saghir, “Thermal diffusion in a binary fluid mixture subject to external vibrations: Effect of variable physical properties”  
8th ASME/JSME Thermal Engineering Joint Conference, Honolulu, HI, March 13-17, 2011  
(AJTEC2011-44109, pp. T10024-T10024-5)

- ❖ Parsa, A. and M. Z. Saghir, “Numerical investigation of g-jitters effect in thermovibrational experiments using different Equation of States”,  
42nd AIAA Thermophysics Conference, Honolulu, HI, June 27-30, 2011  
(Chapter DOI: 10.2514/6.2011-3484)
- ❖ Parsa, A., S. Srinivasan and M. Z. Saghir, “Thermodiffusion of binary and ternary fluid mixture in the reduced gravity environment of the international space station”  
61st IAC, Praugue, Czech Republic. September 27 - October 1, 2010  
(IAC-10,A2,6,11,x7066)

## **RESEARCH EXPERIENCES**

**Thermal Diffusion and CFD Lab., Research Assistant** **2007 – 2011**  
Ryerson University, Mechanical Eng. Dept., Toronto, ON, Canada

- Conducted analytical and numerical analysis in Fluid Mechanics, Thermodynamics, Heat Transfer, Mass Transfer and Computational Fluid Dynamics;
- Performed detail analytical, numerical and computational analysis of thermal diffusion, component separation and fluid flow in binary and ternary mixtures under the influence of temperature and vibration in zero gravity environment of International Space Station (ISS);
- Analyzed the experimental results obtained from ISS utilizing image processing tools and methods. The experiments performed in ISS by Canadian astronaut Robert (Bob) Thirsk;
- Performed computational fluid dynamics analysis utilizing commercial software packages such as Ansys Fluent and Fidap;
- Model the experiment using the proper Equation of State (PC-SAFT) utilizing the related CFD code. The similar existing models available in the literature have lot of simplifications that compromise the accuracy of the results;
- Performed numerical analysis and post processing utilizing Matlab, Mathematica and Tecplot software and packages;
- Modified in house codes written in Fortran and C/C++ to solve unconventional problems not available in commercial software;
- Benchmarked results between three scientific groups of SODI-IVIDIL project research team (Canada, Belgium and Russia) and prepared corresponding reports and presentations;
- Validated and compared the numerical and experimental results for various scenarios;
- Spent few months at Canadian Space Agency (Montreal, Saint-Hubert) to analyze the random vibrations recorded at International Space Station;
- Obtained through the analyses, solutions to improve the accuracy of future experiments on-board International Space Station.

**Applied Mechanics and FEA Lab., Research Assistant** **2004 – 2005**  
University of Liverpool, Mechanical Eng. Dept., Liverpool, UK

- Investigated the relation between internal forces and natural frequency to reduce and control vibration in helicopter (especially pilot seat) which has been always a complex and challenging task;
- Conducted analytical analysis, Finite Element Analysis and experimental tests;
- Prepared and designed the model based on the theory.

- Prepared the drawings from the 3D model to manufacture the test prototype at shop;
- Defined the loading and boundary condition of the experiment based on the theoretical and analytical analysis;
- Performed Finite Element Analysis utilizing MSC Patran/Nastran software;
- Performed the experiment and compared the FEA and test results for conclusion.

## **INDUSTRIAL EXPERIENCES**

### **Mechanical Engineering Department, Mechanical Engineer**

**2014 – 2015**

WorleyParsons, Markham, ON, Canada

- Design of Service Air, Breathing Air, and related low pressure water cooling systems in Darlington Nuclear power plant;
- Code compliance review and analysis of Pressure Regulating Valves (PRV) in nuclear power plant to confirm the safety requirements;
- Review nuclear power plant various areas and rooms to ensure penetrations and openings are code compliance as per NFPA and CSA standards requirements;
- Analysis of recovery water cooling system to find the proper design change to reduce vibration due to water hammer and two phase flow conditions.

### **Mechanical Engineering Department, Mechanical Engineer**

**2011 – 2014**

HATCH Ltd., Mississauga, ON, Canada

- Completed technical engineering activities through conceptual design, prefeasibility and feasibility analysis, and detailed design phases of large industrial projects;
- Produced conceptual and detail design for custom machinery, tools and specialized equipment involving sizing, selecting, stress analysis, fatigue analysis, thermal analysis, material selection, engineering calculations, and 3D CAD design review and modification;
- Directed, and provided technical guidance to engineers and designers through the project;
- Conducted budgeting, resourcing, scheduling and other project management activities as lead project engineer;
- Conducted technical meetings with clients, contractors and vendors to resolve design conflicts;
- Provided various proposals for budgetary estimate, scope of work definition and milestone deliverable purposes;
- Completed preparation and review of design criteria, technical specifications, data sheets, material take offs, bill of materials and operation manuals;
- Reviewed, amended and approved PFD, P&ID, Plant Layout, GA and detail drawings;
- Liaised with vendors for RFQ and vendors technical bid evaluations;
- Performed technical inquiries to vendors and manufacturers to optimize the design for better conformity to process requirements and cost reduction;
- Conducted vendor drawing verification and approval, inspection during fabrication, testing and commissioning;
- Worked in major projects including:
  1. Praxair CMAR furnace and plant (natural gas to synthetic gas process plant)

2. SASOL (coal based synthetic fuel plant)
3. OPG Pickering nuclear power plant refurbishment (spent fuel bay handling system)
4. Cliffs chromite (ferrochrome processing plant)
5. Kinross TASIAST (gold processing plant)
6. Vale ONCA PUMA (nickel processing plant)
7. Qinghai Salt Lake Industry Group Co. (calcium carbide production plant)

**Mechanical Engineering Department, Mechanical Engineer**

**2005 – 2007**

Namvaran Consulting Engineering Company, Tehran, Iran

- Completed extensive specialized training in process & hydraulic calculation, material & corrosion, NDE, material selection, fire protection system design, piping & plant design, fixed & rotating machinery equipment, material handling and storage system, and HVAC;
- Conducted technical engineering activities through conceptual design, prefeasibility and feasibility analysis, and detailed design phases of large industrial projects;
- Prepared, reviewed and commented on Plant Layout, PFD and P&ID design documentation in collaboration with other engineering departments and disciplines;
- Directed and coordinated designers through the 3D CAD design of the equipment and plant;
- Conducted technical meetings with clients, contractors and vendors to resolve design conflicts;
- Completed thorough vendor proposal assessment to design, size and select various equipment;
- Prepared and reviewed design criteria, technical specification, data sheet, material take off and bill of material;
- Selected appropriate material to meet the design and operating conditions by studying standards, codes and manufacturer data sheets;
- Reviewed, amended and approved contractor shop drawings and documents and coordinated their work on site;
- Liaised with vendors for RFQ, reviewed vendor documentation for conformance to standards, codes and specification and vendor technical bid evaluation;
- Worked in major projects including:
  1. Mahshahr High Density Polyethylene (HDPE) expansion
  2. Kermanshah urea and ammonia petrochemical complex
  3. Jalal Abad iron ore concentration plant
  4. Esfahan refinery expansion

**Engineering Department, Engineer**

**2002 – 2004**

Madankav Consulting Engineering Company, Tehran, Iran

- Conducted consultancy, engineering and project management services in mining and mineral processing projects and proposals;
- Evaluated the feasibility of new mineral processing plants in various regions of Iran;
- Conducted technology, system and operational feasibility study of mineral processing projects.