Ali Salavati-Zadeh

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If God had wanted me otherwise, he would have created me otherwise. *-Johann Wolfgang von Goethe*

Personal Information

Place and Date of Birth: Sep. 1982, Tehran.

Marital Status: Married, No Children.

Research Interests

Fuels and Combustion: ★★★★

Detailed Chemical Kinetics: ★★★★

Numerical Simulation of Turbulent Reactive Flows: ★★★★

Computer Aided Engineering: ★★★☆

Object Oriented Programming: ★★☆☆

Current Status

Vehicle, Fuel and Environment Research Institute (VFERI) — **University of Tehran**
Research Scientist and Head of Energy Research Group — *2002-now*

Education

University of Tehran — **Iran**
B.Sc. — *2000–2004*

University of Tehran — **Iran**
M.Sc. — *2004–2006*

University of Tehran — **Iran**
Ph.D. — *2006–2012*

Ph.D. Dissertation

title: *Soot Formation Modeling in Diesel Engines*

Supervisor: Dr. Vahid Esfahanian

Master Thesis

title: *Simulation of Internal Combustion Engines Using Coupled 1D/3D Approach*

Supervisors: Dr. Farshad Kowsari, Dr. Vahid Esfahanian

Experience

Academic

University of Tehran **Iran**
Graduate Student *2004–2012*
Includes current Ph.D. research, Ph.D. and Masters level coursework and research/consulting projects.

University of Tehran **Iran**
Teaching Assistant *2004–2012*
Duties at various times have included office hours, leading weekly computer lab exercises. Shared responsibility for lectures, exams, homework assignments, and grades.

- Heat Transfer I
- Fluid Mechanics I
- Internal Combustion Engines
- Fuels and Combustion
- Gas Dynamics
- Advanced Combustion

Professional

Vehicle, Fuel and Environment Research Institute **University of Tehran**
Research Scientist *Since Sep. 2003*

- ☆ Fellow, Organizing Committee of the 1^{st} Int'l Conference on CNG Alternative Fuel and Natural Gas Vehicles, May 2004, Tehran, Iran.
- ☆ Fellow, Lecturer of workshop entitled "Internal Combustion Engines Simulation using KIVA-3V Computational Code," In 4^{th} Int'l Conference on Internal Combustion Engines, Nov. 2005, Tehran, Iran.
- ☆ Fellow, Organizing Committee the 17^{th} Int'l Conference of Iranian Society of Mechanical Engineers (ISME 2009), May 2009, Tehran, Iran.
- ☆ Project Fellow, Development of CNG Utilization Database and Strategy in Vehicles in Iran, 2004-2006.
  Project Employer: Iranian Fuel Consumption Organization (IFCO)
- ☆ Project Fellow, Development of Virtual Engine Package, 2006-2008.
  Project Employer: Iran Khodro Industrial Group (IKCo)
- ☆ Project Fellow, Revising 8361 Standard on Fuel Consumption Criteria of Off-Road Engines, 2008-2011.
- ☆ Project Fellow, Complete Thermo-Fluid and Structural Simulation of 4-Cylinder Two-Stroke Engine, 2010-now.
  Project Employer: Iran Aviation Industries Organization
- ☆ Project Fellow, Revising 8361 Standard on Fuel Consumption Criteria of Off-Road Engines, 2008-2011.
  Project Employer: Iranian Fuel Consumption Organization (IFCO)
- ☆ Project Fellow, Revising 8361 Standard on Fuel Consumption Criteria of Off-Road Engines, 2008-2011.
- ☆ Project Fellow, Fuel Consumption Criteria Development and Determination of Correction Factor for G20 in Domestic NGV Fuel Consumption Criteria, 2012-2014.
  Project Employer: Iranian Fuel Consumption Organization (IFCO)
- ☆ Project Fellow, Feasibility Study and Fuel Consumption Criteria Development for Light-Duty Vehicles Considering Carbon Dioxide Emission, 2013-2015.

Project Employer: Iranian Fuel Consumption Organization (IFCO)

- ☆ Project Fellow and Manager of Combustion Chamber 1D Network Simulation, Thermo-Fluid Analysis of MGT-40 Gas Turbine, 2013-now.
  Project Employer: TUGA Co.-MAPNA Group
- ☆ Project Fellow, Developement and Prototyping of National Aviation Engine, 2012-now.
  Project Employer: Iran Aviation Industries Organization
- ✪ Project Manager, Experimental and Numerical Investigation on the Effect of Natural Gas Composition on Performance of Gas-Fueled Internal Combustion Engines, 2006-2008.
  Project Employer: Iran Khodro Industrial Group (IKCo)
- ✪ Project Manager, Experimental and Numerical Analysis of the Design of Intake Manifolds of B3I, XU7 and M24I Engines, 2006-2009.
  Project Employer: Ministry of Industry, Mining and Trade (MIMT)
- ✪ Project Manager, Technical and Economical Feasibility Study, Cost-Benefit Analysis and Business Plan Development for Utilization of Diesel Fuel in Urban Transportation Fleet, 2008-2010.
  Project Employer: Iranian Fuel Consumption Organization (IFCO)
- ✪ Project Manager, Manager Contractor of Know-How Development for D87 Heavy Dual-Fuel Engine, 2009-2012.
  Project Employer: Iranian Fuel Consumption Organization (IFCO)
- ✪ Project Manager, Development of National Iranian Numerical Simulation Portal Based on International Experiences, 2012-2015.
  Project Employer: Ministry of Science, Research and Technology
- ✪ Project Manager, Complete Thermo-Fluid and Structural Simulation of Rotary Engine, 2012-now.
  Project Employer: Iran Aviation Industries Organization

Awards & Certificates

Awards

The Best Iranian Combustion Related PhD Dissertation **February 2014**
The Iranian Combustion Institute

Certificates

AVL FIRE Training Course **University of Tabriz, Iran**
Instructor: Maik Suffa *27 Feb. - 1 Mar. 2007*

ISO 9001:2000 Auditor Course **University of Tehran, Iran**
Instructor: TUV-Academy Rheinland *May 2007–24 Hours*

CHP & Applications **Tehran, Iran**
Instructor: Dr. P. Ahmadi *10 Jul. - 11 Jul. 2012*

AVL BOOST & AVL FIRE Training Course **AVL Academie, Austria**
Instructors: P. Tominc, T. Milosic, B. Krajnc, A. Diemath *24 Sep. - 5 Oct. 2012*

Languages

Persian: Mother Language

English: Fluent (B2)

German: Fluent (B2)

Computer skills

OS: Unix/Linux, Windows

Programming Languages: Fortran, C and C++, Use of Unix shell scripts

Developed Softwares:

- ENGINE 1D SIMULATION SOFTWARE: In-house software for modeling the entire engine cycle including combustion;
- S.I. ENGINE COMBUSTION SIMULATION SOFTWARE: In-house software for combustion simulation and knock prediction inside S.I engines cylinder using a quasi-dimensional, phenomenological model considering cylinder geometrical parameters and spark plug position;

Engine Development CAE Softwares: AVL BOOST, AVL FIRE.

Other Softwares: MATLAB, STANJAN, THERMOFLOW, Microsoft Office (Word, Excel, Access, OneNote, Visio, OutLook, PowerPoint), LaTeXand its related packages.

Interests

Reading: Novels and Poems are preferred.

Watching Movies: I prefer to watch a good film twice rather than watching anything.

Jogging and Swimming: No description available!

Watching Football: I am a real coach potato!

Publications

Reviewer for the Journals

- *Energy Conversion and Management*
- *Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering*

Articles

H. Akbari, A. Salavati-Zadeh, A. Javaheri, V. Esfahanian, S.V. Ghavami, and H. Ghomashi. Reconstruction of in-cylinder temperature, equivalence ratio and nox distribution fields using proper orthogonal decomposition technique. *Journal of Applied Fluid Mechanics*, 9:89–95, 2016.

S. Azad, V. Esfahanian, A. Salavati-Zadeh, and A. Javaheri. A numerical simulation for prediction of emission of single cylinder cng engine. *Modares Mechanical Engineering*, 16:329–332, 2016 (In Persian).

B. Bahri, A. Abdul Aziz, A. Salavati-Zadeh, and V. Esfahanian. the effect of ethanol combustion on hcci engine performance and emissions. *The Journal of Engine Research*, 41:21–30, 2016.

SV. Ghavami, A. Salavati-Zadeh, A. Javaheri, B. Bahri, V. Esfahanian, and M. Masih-Tehrani. Investigation of effects of natural gas composition on one-dimensional comprehensive engine model calibration. *Accepted and to be Published by Lecture Notes in Mechanical Engineering*, 2016.

S.V. Ghavami, A. Salavati-Zadeh, A. Javaheri, M. Masih-Tehrani, and V. Esfahanian. A kinetic investigation on the effects of hydrogen enrichment on pollutants and greenhouse gases of gas-fuelled engines in high compression ratio. *Accepted and to be Published Iranian Fuel and Combustion Journal*, 2016 (In Persian).

A. Javaheri, V. Esfahanian, A. Salavati-Zadeh, and M. Darzi. Energetic and exergetic analyses of a variable compression ratio spark ignition gas engine. *Energy Convers. Manage.*, 88:739–748, 2014.

A. Javaheri, V. Esfahanian, A. Salavati-Zadeh, M. Darzi, and M. Mirsoheil. Investigation of natural gas composition effects on knock phenomenon in si gas engines using detailed chemistry. *Applied Mechanics and Materials*, 493:239–244, 2014.

A. Salavati-Zadeh, V. Esfahanian, and A. Afshari. Detailed kinetic modeling of soot-particle and key-precursor formation in laminar premixed and counterflow diffusion flames of fossil fuel surrogates. *ASME J. Energy Resour. Technol.*, 135:0311011–03110113, 2013.

A. Salavati-Zadeh, V. Esfahanian, and H. Akbari. The effect of fuel flow rate and equivalence ratio on soot formation in laminar premixed flames of C2 hydrocarbons using pod considering radiative heat losses. *Computational Thermal Sciences*, 6:361–367, 2014.

A. Salavati-Zadeh, A. Javaheri, S V. Ghavami, V. Esfahanian, M. Masih-Tehrani, and H. Akbari. A detailed kinetic investigation on the effects of hydrogen enrichment on the performance of gas-fueled si engine. *International Journal of Green Energy*, 13:1042–1049, 2016.

Selected Conference Presentations

H. Akbari, A. Salavati-Zadeh, A. Javaheri, V. Esfahanian, V. Ghavami, and H. Ghomashi. In-cylinder temperature and equivalence ratio field and nox distribution reconstruction using proper orthogonal decomposition technique. In *Proceedings of 7th Exergy, Energy and Environment Symposium*, Valenciennes, France, April 2015.

B. Bahri, A. Abdul-Aziz, A. Salavati-Zadeh, and V. Esfahanian. The effect of ethanol combustion on hcci engine performance and emissions. In *Proceedings of 9th International conference on Internal Combustion Engines and Oil*, Tehran, Iran, February 2016.

V. Esfahanian, K. Alizad, A. Salavati-Zadeh, M. Ramezani, and M. Mohammadzadeh. Numerical 1d simulation of internal combustion engines considering entropy level changes. In *Proceedings of the Sixth International Conference on Internal Combustion Engines*, Tehran, Iran, November 2009.

V. Esfahanian, K. Alizad, A. Salavati-Zadeh, M. Ramezani, and M. Mohammadzadeh. Numerical 1d simulation of internal combustion engines considering entropy level changes. In *FISITA World Automotive Congress*, Budapest, Hangary, June 2010.

V. Esfahanian, A. Alizadeh-Attar, A. Salavati-Zadeh, A. Javaheri, H. Dashtaki, and F. Vakili-Farahani. A kinetic investigation of the effects of natural gas composition variations on cng fuelled engines knock. In *FISITA World Automotive Congress*, Munich, Germany, September 2008.

V. Esfahanian, M. Doustdar, A. Javaheri, A. Salavati-Zadeh, and H. Moqtaderi. Investigation of boundary condition treatment in 1d/3d cfd code coupling for si engines simulation. In *FISITA World Automotive Congress*, Munich, Germany, September 2008.

V. Esfahanian, M. Esfahanian, M. Masih-Tehrani, H. Nehzati, K. Mahootchi, M. Soufi, and A. Salavati-Zadeh. Design and development of the first hybrid bus in middle east; through

iran with clean air. In *Proceedings of the 21st Annual International Conference on Mechanical Engineering*, Khaje-Nasir Technical University, Tehran, Iran., May 2013 (In Persian).

V. Esfahanian, M. Movassat, D. Kamandlooei, and A. Salavati-Zadeh. Turbocharging for compensation of power loss in natural gas fuelled engines considering the pollution. In *Proceedings of the Fourth International Conference on Internal Combustion Engines*, Tehran, Iran, November 2005 (In Persian).

V. Esfahanian, M. Ramezani, A. Salavati-Zadeh, A. Kahrobaeeyan, and K. Alizad. Diesel cycle simulation using multizone spray model and stoichiometric combustion assumption. In *Proceedings of the Sixth International Conference on Internal Combustion Engines*, Tehran, Iran, November 2009 (In Persian).

V. Esfahanian, M. Salahi, H. Dashtaki, and A. Salavati-Zadeh. A parametric study on intake port geometry of an internal combustion engine. In *Proceedings of the AVL Advanced Simulation Technologies Int'l User Conference*, Graz, Austria, June 2011.

V. Esfahanian, M. Salahi, A. Javaheri, and A. Salavati-Zadeh. A new methodology for obtaining center line of 3d pipes for 1d simulation. In *Proceedings of the 12$^{\text{th}}$ International Fluid Dynamics Conference*, Babol, Iran, October 2009 (In Persian).

V. Esfahanian, A. Salavati-Zadeh, M. Nasr-Azadani, and M. Mirsoheil. Simulation and comparison of the performance of cng and gasoline engines using flame propagation model considering the effects of some of the parameters of combustion chamber. In *Proceedings of the First Conference and Exhibition of Natural Gas for Vehicles*, Qualalmpur, Malaysia, July 2005.

V. Esfahanian, A. Salavati-Zadeh, M. Nasr-Azadani, and M. Mirsoheil. Simulation and comparison of the performance of cng and gasoline engines using flame propagation model considering the effects of some of the parameters of combustion chamber. In *Proceedings of the Fourth International Conference on Internal Combustion Engines*, Tehran, Iran, November 2005 (In Persian).

V. Esfahanian, O. Shakeri, A. Salavati-Zadeh, A. Barati, K. Mahootchi, and M. Ramezani. Technical, economical and environmental feasibility study of diesel technology usage in national fleet of light duty vehicles. In *Proceedings of the Fifth Conference of Productivity in Energy and Industry*, Tehran, Iran, March 2011 (In Persian).

B. Nourani, A. Salavati-Zadeh, V. Esfahanian, H. Saeed, M. Mohammadi, and Gh. Hamzehnava. Numerical study of methane/hydrogen flame structure at mild condition. In *Proceedings of the 2nd Thermal and Fluid Engineering Conference*, Las Vegas, USA, April 2017.

B. Nourani, A. Salavati-Zadeh, A. Khanlari, S.V. Ghavami, and V. Esfahanian. Simulation of methane-hydrogen flame structure in mild combustion regime. In *Proceedings of Sixth Iranian Fuel and Combustion Conference*, University of Mashhad, Iran, February 2016 (In Persian).

A. Salavati-Zadeh, A. Afshari, and V. Esfahanian. Soot formation modeling in laminar premixed flames of C2 hydrocarbons. In *Proceedings of the 13$^{\text{th}}$ International Fluid Dynamics Conference*, Shiraz, Iran, October 2010.

A. Salavati-Zadeh, A. Afshari, and V. Esfahanian. Reduced kinetic modeling for formation of soot precursors in light and heavy hydrocarbon fuels. In *Proceedings of the 7th Int'l Conference on Chemical Kinetics*, Boston, USA, July 2011.

A. Salavati-Zadeh, M. Darzi, A. Javaheri, and V. Esfahanian. Experimental and detailed kinetic investigation on the effects of natural gas composition on emission of gas-fuelled si engines. In *Proceedings of Fisita 2014 World Automotive Congress*, Maastricht, Netherlands, July 2014.

A. Salavati-Zadeh, V. Esfahanian, A. Afshari, and M. Ramezani. A multi zone spray and combustion model for formation of polycyclic aromatic hydrocarbons and soot in diesel engines. In SAE-China and FISITA, editors, *Proceedings of the FISITA 2012 World Automotive Congress*, volume 190 of *Lecture Notes in Electrical Engineering*, pages 1069–1077. Springer Berlin Heidelberg, 2012.

A. Salavati-Zadeh, V. Esfahanian, and H. Akbari. The effect of fuel flow rate and equivalence ratio on soot formation in laminar premixed flames of C2 hydrocarbons using pod considering radiative heat losses. In C.N. Markides, A.L. Heyes, and P.R.N. Childs, editors, *Proceedings of the 13$^{\text{th}}$ UK Heat Transfer Conference (UKHTC2013)*. DEG Imperial College London, 2013.

A. Salavati-Zadeh, A. Javaheri, S V. Ghavami, V. Esfahanian, M. Masih-Tehrani, and H. Akbari. A detailed kinetic investigation on the effects of hydrogen enrichment on the performance of gas-fuelled si engine. In *Proceedings of 10th International Green Energy Congress*, Taichung, Taiwan, May 2015.

References

- Prof. Dr. Vahid Esfahanian, Director/Manager of Vehicle, Fuel and Environment Research Institute, University of Tehran, Iran, E-mail: evahid@ut.ac.ir, Tel: +98-21-88020741.
- Prof. Dr. Kiumars Mazaheri, President of the Iranian Combustion Institute, Tarbiat Modares University, Iran, Email: kiumars@modares.ac.ir, Tel: +98-21-82883352.
- Maik Suffa, CFD Product Manager, AVL Advanced Simulation Technologies, Graz, Austria, E-mail: maik.suffa@avl.com, Tel: +43-316-7875136.
- Dr. -Ing. Peter Priesching, Project Leader of Combustion and Emission Modeling, AVL Advanced Simulation Technologies, Graz, Austria, E-mail: peter.priesching@avl.com, Tel: +43-316-7871294.
- Dr. -Ing. Reinhard Tatschl, Manager of Research and Technology Development, AVL Advanced Simulation Technologies, Graz, Austria, E-mail: reinhard.tatschl@avl.com, Tel: +43-316-787618.