



UNIVERSITY OF PRETORIA
Department of Mechanical and Aeronautical Engineering
CURRICULUM VITAE/ RESUME OF

Dr. Mehdi Mehrabi – Updated Aug 2021
NRF Y1 rated researcher
UK Chartered Engineer (C.Eng.)
<http://orcid.org/0000-0003-3027-2560>
Scopus author ID: 36150065400

1. BIOGRAPHICAL SKETCH

1.1 GENERAL INFORMATION						
Surname	MEHRABI	First names		Mehdi		
SA ID		Title	Dr.	Female		Male <input checked="" type="checkbox"/>
Department	Mechanical & Aeronautical Engineering	Position		Senior Lecturer		
Direct Telephone	012 420 4743	E-mail		mehdi.mehrabi@up.ac.za		
Date of appointment	01/01/2017	Permanent full-time	<input checked="" type="checkbox"/>	Temporary full-time		

1.2 ACADEMIC QUALIFICATIONS				
Degree/ Diploma	Field of study	Higher education institution	Year	Distinctions
BEng	Mechanical Engineering	Urmia University	2006	NA
MEng	Mechanical Engineering	Urmia University	2011	NA
PhD	Mechanical Engineering	University of Pretoria	2015	NA

1.3 WORK EXPERIENCE TO DATE		
Name of employer	Capacity and/or type of work	Period From mm//yy to mm//yy
University of Pretoria	Senior Lecturer	Jan 2017 – Present
Harvard-MIT HST	Postdoctoral Fellow	Jun 2016 – Dec 2016
University of Pretoria	Postdoctoral Fellow	Jun 2015 – May 2016
University of Pretoria	Lecturer (Temporary contract)	Jan 2015 – May 2015

2. TEACHING AND LECTURING DUTIES

2.1 Courses/modules presented.		
Course	Level (e.g. <i>second year, Masters</i>)	Self-developed (Yes or No)
Heat and Mass Transfer (MHM 420) Lecturer / Course Coordinator	Final Year	Yes
Advanced heat and mass transfer (MHM 780) Lecturer / Course Coordinator	Honors degree	Yes
Thermoflow (MTV410) Lecturer	Final Year	Partially developed
Industrial Training (MPY 315/ 415) Course Coordinator	Second Year/ Third Year	Yes
Impact of Engineering and Group work (MIA 320) Lecturer / Course Coordinator	Second Year	Yes
2.2 Study leader of design and research projects (MOX and MRN)		
The study leader of more than 100 design and research projects of final year undergraduate students in the Department of Mechanical and Aeronautical Engineering at the University of Pretoria since Jan 2015.		

3. RESEARCH

3.1 Research field and speciality					
Numerical simulations; Convection heat transfer; Multi-objective optimization; Artificial Intelligent modeling techniques; Air and water pollution. Energy conversion and efficiency.					
3.2 Postgraduate students					
Name of student	Degree	Title of dissertation	Supervisor	Co-supervisor(s)	Year of registration
Saboura YOUSEFI	PhD/ Part time	Modeling and multi-objective optimization of heat transfer characteristics and pressure drop of nanofluids in microtubes.	Dr. M. Mehrabi	Prof. M. Sharifpur / Prof. J.P. Meyer	2017
Saman POURAHMAD	Master's	The effect of geometrical characteristics on heat transfer in heat exchanger.	Prof. S.M. Pesteei	Dr. M. Mehrabi	2017 – (Graduated in 2019)
Paper published from the thesis:		POURAHMAD S., PESTEEI SM, and MEHRABI M ; The effect of geometrical characteristics of wavy strip turbulator and thermodynamic properties of fluid on exergy loss and heat transfer in a tube in tube heat exchanger, <i>Experimental Heat Transfer</i> , 32(4), pp. 393-409, 2019.			
Marcel MEYER	Master's	Modeling of heat transfer characteristics of nanofluids in microtubes.	Dr. M. Mehrabi	Prof. J.P. Meyer	2018 – (Graduated in 2020)
Paper published from the thesis:		MEYER M, MEHRABI M , and MEYER JP; Modeling and Multi-objective Optimization of Heat Transfer Characteristics and Pressure Drop of Nanofluids in Microtubes, <i>Heat Transfer Engineering</i> , October 2020.			
Michael SEAL	Master's	Predict the boiling regimes of the condensation heat transfer by using Artificial Intelligence (AI) techniques.	Dr. M. Mehrabi	Prof. J.P. Meyer	2019 – (Graduated in 2021)
Paper published from the thesis:		SEAL M, NOORI RAHIM ABADI SMA, MEHRABI M , and MEYER JP; Machine learning classification of in-tube condensation flow patterns using visualization, <i>International Journal of Multiphase Flow</i> , Volume 143, October 2021, 103755.			
Bhengu KWANDA	Master's	Study pool boiling regimes in an annulus using CFD and deep learning.	Dr. M. Mehrabi	Prof. J.P. Meyer	2021

3.3 Examiner for postgraduate thesis			
Year	Degree, Name of Candidate and Name of supervisor(s)	Title of the Thesis	University/Institute
2017	M.Sc. Gaettan K KATAMBA Prof. M. Sharifpur / Prof. J.P. Meyer	Investigation into waste heat to work in thermal systems in order to gain more efficiency and less environmental defect	University of Pretoria
2018	M.Eng. Vishal RAMNATH Prof. M. Sharifpur / Prof. J.P. Meyer	Mathematical Modelling of Nanofluid Thermophysical Properties Using Copulas	University of Pretoria
2019	Ph.D. Solomon GIWA Prof. M. Sharifpur / Prof. J.P. Meyer	Investigation into thermal-fluid properties of hybrid ferrofluids as heat transfer fluids	University of Pretoria

3.4 Research outputs

3.4.1 Publications in peer-reviewed or refereed journals

1. BAZAI H, KARGAR E and **MEHRABI M**; Using an encoder-decoder convolutional neural network to predict the solid holdup patterns in a pseudo-2d fluidized bed, Chemical Engineering Science, Vol. 246, December 2021, 116886.
2. SEAL M, NOORI RAHIM ABADI SMA, **MEHRABI M**, and MEYER JP; Machine learning classification of in-tube condensation flow patterns using visualization, International Journal of Multiphase Flow, Vol. 143, October 2021, 103755.
3. **MEHRABI M**, and NOORI RAHIM ABADI SMA; Modeling of condensation heat transfer coefficients and flow regimes in flattened channels, International Communications in Heat and Mass Transfer, Vol.126, July 2021, 105391.
4. Horowitz LF, Rodriguez AD, Au-Yeung A, Bishop KW, Barner LA, Mishra G, Raman A, Delgado P, TC Liu JTC, Gujral TS, **MEHRABI M**, Yang M, Pierce RH, Folch A, Microdissected "cuboids" for microfluidic drug testing of intact tissues, Lab-On-Chip, Lab on a Chip. Vol. 21, 2021,122-142.
5. EWIM D, **MEHRABI M**, and MEYER JP; Modelling of heat transfer coefficients during condensation at low mass fluxes inside horizontal and inclined smooth tubes, Heat Transfer Engineering, Vol. 42 (8), 2021, 683-694.
6. MEYER M, **MEHRABI M**, and MEYER JP; Modeling and Multi-objective Optimization of Heat Transfer Characteristics and Pressure Drop of Nanofluids in Microtubes, Heat Transfer Engineering, October 2020.
7. **MEHRABI M**, NOORI RAHIM ABADI SMA, and MEYER JP; Heat transfer and fluid flow optimization of Titanium dioxide-water nanofluids in the turbulent flow regime, Heat Transfer Engineering, vol. 41(1), 2020, 36-49.
8. POURAHMAD S., PESTEEI SM, and **MEHRABI M**; The effect of geometrical characteristics of wavy strip turbulator and thermodynamic properties of fluid on exergy loss and heat transfer in a tube in tube heat exchanger, Experimental Heat Transfer, Vol. 32(4), 2019, 393-409.

9. **MEHRABI M**, SHARIFPUR M and MEYER JP; Electrical conductivity and pH modelling of magnesium oxide–ethylene glycol nanofluids, *Bulletin of Materials Science*, vol. 42(3), 2019,108.
10. NOORI RAHIM ABADI SMA, **MEHRABI M**, MEYER JP and J. Dirker; Effect of saturation temperature on the condensation of R134a inside an inclined smooth tube, *International Journal of Refrigeration*, Vol. 94, 2019, 186-204.
11. NOORI RAHIM ABADI SMA, **MEHRABI M**, and MEYER JP; Numerical study of steam condensation inside a long, inclined, smooth tube at different saturation temperatures, *International Journal of Heat and Mass Transfer*, Vol. 126, 2018, 15-25.
12. NOORI RAHIM ABADI SMA, **MEHRABI M**, and MEYER JP; Prediction and optimization of condensation heat transfer coefficients and pressure drops of R134a inside an inclined smooth tube, *International Journal of Heat and Mass Transfer*, Vol. 124, 2018, 953-966.
13. ADIO, S.A., **MEHRABI M**, SHARIFPUR M and MEYER JP; Experimental investigation and model development for effective viscosity of MgO-ethylene glycol nanofluids by using dimensional analysis, FCM-ANFIS and GA-PNN techniques, *International Communications in Heat and Mass Transfer*, Vol. 72, 2016, 71-83.
14. AYBAR HS, SHARIFPUR M, AZIZIAN MR, **MEHRABI M** and MEYER JP; A review of thermal conductivity models of nanofluids, *Heat Transfer Engineering*, Vol. 36 (16), 2015, 1085-1110, 2015.
15. MEHRABI M, SHARIFPUR M and MEYER JP; Modelling and multi-objective optimisation of the convective heat transfer characteristics and pressure drop of low concentration TiO₂-water nanofluids in the turbulent flow regime, *International Journal of Heat and Mass Transfer*, Vol. 67 (1), 2013, 646-653.
16. **MEHRABI M**, SHARIFPUR M and MEYER JP; Viscosity of nanofluids based on an artificial intelligence model, *International Communications in Heat and Mass Transfer*, Vol. 43 (1), 2013,16-21.
17. REZAZADEH S, **MEHRABI M**, PESTEEI SM and MIRZAEI I; Using adaptive neuro-fuzzy inference system (ANFIS) for proton exchange membrane fuel cell (PEMFC) performance modeling, *Journal of Mechanical Science and Technology*, Vol. 26 (11), 2012, 3701-3709.
18. **MEHRABI M**, SHARIFPUR M and MEYER JP; Application of the FCM-based neuro-fuzzy Inference system and genetic algorithm-polynomial neural network approaches for modeling of the thermal conductivity of alumina-water nanofluids, *International Communications in Heat and Mass Transfer*, Vol. 39 (7), 2012, 971-977.
19. **MEHRABI M**, PESTEEI SM and PASHAEI TG; Modeling of heat transfer and fluid flow characteristics of helicoidal double-pipe heat exchangers using adaptive neuro-fuzzy inference system (ANFIS), *International Communications in Heat and Mass Transfer*, Vol. 38 (4), 2011, 525-532.
20. **MEHRABI M** and PESTEEI SM; Adaptive neuro-fuzzy modeling of convection heat transfer of turbulent supercritical carbon dioxide flow in a vertical circular tube, *International Communications in Heat and Mass Transfer*, Vol. 37 (10), 2010, 1546-1550.
21. PESTEEI SM and **MEHRABI M**; Modeling of convection heat transfer of supercritical carbon dioxide in a vertical tube at low Reynolds numbers using neural network, *International Communications in Heat and Mass Transfer*, Vol. 37 (7), 2010, 901-906.

3.4.2 Published full-length conference papers/keynote addresses

1. **MEHRABI M**, NOORI RAHIM ABADI SMA and MEYER JP; Condensation Heat Transfer Coefficient and Pressure Drop of R134a in a Tube: Modelling and Optimization, *Proceedings of the 16th International Heat Transfer Conference*, Beijing, paper IHTC16-23147, 10- 16 August 2018.
2. **MEHRABI M**; Application of FCM-ANFIS approach to model heat transfer and pressure drop of Titania-water nanofluids in the turbulent flow regime, *Proceedings of the 19th International Conference on*

Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems, Toulouse, France, paper EuroSimE2018-089, 15- 18 April 2018.

3. MENTZ S, **MEHRABI M**, SHARIFPUR M and MEYER JP; Humidification and dehumidification process: Advantages and disadvantages, Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition (IMECE), Houston, paper IMECE2015-50903, 13- 19 November 2015.
4. **MEHRABI M**, SHARIFPUR M and MEYER JP; Convective heat transfer characteristics of low concentration CuO-water nanofluids in the turbulent flow regime based on an artificial intelligence model, Proceedings of the 15th International Heat Transfer Conference, Kyoto, paper IHTC15-8461, 11- 15 August 2014.
5. **MEHRABI M**, PASHAEI TG; SHARIFPUR M and MEYER JP; Application of genetic algorithm-polynomial neural network for modelling heat transfer and fluid flow characteristics of a double-pipe helical heat exchanger, Proceedings of the ASME 2013 Heat Transfer Conference, Minneapolis, paper HT2013-17194, 14- 19 July 2013.
6. **MEHRABI M**, REZAZADEH S, SHARIFPUR M and MEYER JP; Modeling of proton exchange membrane fuel cell (PEMFC) performance by using genetic algorithm-polynomial neural network hybrid system, Proceedings of the ASME 2012 6th International Conference on Energy Sustainability and 10th Fuel Cell Science, Engineering & Technology Conference, San Diego, paper FuelCell2012-91391, pp.447-452, 23- 26 July 2012.
7. **MEHRABI M**, SHARIFPUR M and MEYER JP; Adaptive neuro-fuzzy modeling of the thermal conductivity of alumina-water nanofluids, Proceedings of the ASME 2012 3rd Micro/Nanoscale Heat & Mass Transfer International Conference, Atlanta, paper MNHMT2012-75023, pp. 155- 161, 3 -6 March 2012.
8. PESTEEI SM and **MEHRABI M**, Modeling of convection heat transfer of carbon dioxide at supercritical pressures in a vertical tube at low Reynolds numbers using adaptive neuro-fuzzy inference System (ANFIS), Proceeding of 7th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2010), Antalya, paper HEFAT2010-1591, pp.2381- 2385, 19 -21 July 2010.
9. **MEHRABI M** and PESTEEI SM; Adaptive neuro-fuzzy modeling of oil retention in a carbon dioxide air-conditioning system, Proceeding of 12th International Refrigeration and Air Conditioning Conference Purdue university, West Lafayette, paper 2130, July 12-15, 2010.
10. PESTEEI SM, **MEHRABI M** and EAYNI A; Modeling of oil retention in a carbon dioxide air-conditioning system using GMDH type neural network, Proceeding of 10th REHVA World Congress (Clima 2010), Antalya, paper 0047, 9- 12 May 2010.
11. PESTEEI SM, SOLIMANPUR and **MEHRABI M**; A study on the structural parameters of a thermosyphonic solar collector, Proceedings of 8th Baku international congress on Energy, Ecology, Economy, Baku, 1-3 June 2005.

4. OTHER SCHOLARLY RESEARCH-BASED CONTRIBUTIONS

4.1 Teamwork and collaboration with others

Member of the research group entitled “Clean Energy Research Group” in the Department of Mechanical & Aeronautical Engineering at University of Pretoria, South Africa, since Jun 2011.

4.2 Membership in national and international bodies

1. American Society of Mechanical Engineers (ASME) Jun 2011- Present
2. Iranian Society of Mechanical Engineers (ISME) Jun 2003- Present

5. COMMUNITY SERVICE OR PROFESSIONAL SKILLS

5.1 Referee duties

Reviewer for several refereed accredited journals including: "Chemical Engineering Communications", "Numerical Heat Transfer, Part A Applications", "International Communications in Heat and Mass Transfer", "International Journal of Heat and Mass Transfer", "Applied Thermal Engineering", and etc.

6. AWARDS AND SCIENTIFIC/SCHOLARLY RECOGNITION

6.1 Scholarly Recognition

NRF Y1 rated researcher.
Chartered Engineer (C.Eng.)

6.1 Research awards and prizes

1. University of Pretoria – Exceptional Young Researcher, 2021.
2. University of Pretoria – Research and Development Grant 2017, 2018, and 2019.
3. NRF – Green Economy Postdoctoral Fellowship, 2015 and 2016.
4. University of Pretoria - Postdoctoral Fellowship, 2015.
5. NRF - Innovation doctoral scholarship, 2014.
6. University of Pretoria - Research support bursary, 2012, 2013, and 2014.

7. CERTIFICATIONS & ADDITIONAL TRAINING

1. FIVB International Volleyball Coach – Level II – July 2018
2. SAS Academic Bootcamp I, University of Pretoria, Jan 2014.
3. Sustainable Agricultural Land Management Projects: Soil Carbon Monitoring, The World Bank, Nov 2013.
4. FIVB International Volleyball Coach – Level I – May 2013.
5. LabVIEW I, University of Pretoria, Jan 2013.
6. Occupational Health and Safety Representatives Programme, University of Pretoria, August 2012.
7. Compressor (Types, Performance and selection in Oil, Gas and Petrochemical Industry), ISME Engineering Course, November 2009.
8. Energy Management, Mabna Company, August 2009.