

CONTACT
INFORMATION**Onoufrios A. Haralampous**

Associate Professor

University of Thessaly
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 41500 Larissa, Greece

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RESEARCH INTERESTS

Heat and Mass Transfer Phenomena, Numerical Methods, Computer-aided Engineering, Emission Control, Renewable Energy Sources

EDUCATION

Aristotle University Thessaloniki

- Ph.D., Laboratory of Applied Thermodynamics Apr. 2005
Computational and Experimental Study of Thermal Failure Mechanisms in Diesel Particulate Filters
- Diploma in Mechanical Engineering Jun. 2000
 Diploma thesis: *Mathematical Modeling of NO_x traps*

PROFESSIONAL
EXPERIENCE

University of Thessaly,

Associate Professor

Jan. 2019 - today

Discipline: Heat and mass transport phenomena - Applications in emission control

- Principal investigator in 3 research projects
- Member of the curriculum committee for the Department of Energy Systems

TEI of Thessaly, Department of Mechanical Engineering

Associate Professor

Apr. 2015 - Jan. 2019

Assistant Professor

Sep. 2010 - Apr. 2015

- Head of the Laboratory of Heat Transfer 2010-2018
- Principal investigator in 2 research projects
- Scientific visit to Department of Chemical Engineering, Prague Institute of Technology 2014
- Participation in 1 lifelong learning program 2015
- Member of Department's Internal Evaluation Team 2011-2018
- Member of Institute's Quality Assurance Unit 2013-2014
- Head of the Department of Mechanical Engineering 2016-2018

Exothermia SA, (spinoff of Aristotle University)

Founding member

Jan. 2007 -Sep. 2010

- Management of software development and customer support
- Coordination of business plan funded by Greek Secretariat of Research and Technology

Aristotle University Thessaloniki, Laboratory of Applied Thermodynamics

Postdoc Researcher

Jun. 2005 - Dec.2006

Research Engineer

Jul. 2000 - Jun.2005

- Participation in 10 research projects funded by the Automotive Industry and European Programs.

RESEARCH PROJECTS

Participant	Aristotle University Thessaloniki
2000	Catalytic Traps for Diesel Particulate Control (CATATRAP) FP4-BRITE/ EURAM 3
2000-2002	New Diesel engines and new fuels - influence of future fuel formulations on emissions and performance of new diesel technology (NEDENEF) European Commission, DG Research
2002-2003	European topic center on air and climate change European Environment Agency
2004	Impact Assessment/Package of New Requirements Relating to the Emissions from Two and Three Wheel Motor Vehicles European Commission, DG Enterprise
2004-2006	Theoretical and experimental investigation of NOx traps for vehicles Greek Ministry of Education, EPEAEK (Pythagoras)
2005-2006	Diesel particulate nickel based foam filter INCO Ltd (Canada)
2006	Economic and technical assistance regarding emission of environmental pollutants from vehicles European Commission, DG Research
2006	Further Improvement and Application of the Transport and Environment REMOVE Model LOT2-Scenario Runs European Commission, DG Environment
2007	European Database of Vehicle Stock for the Calculation and Forecast of Pollutant and Greenhouse Gas Emissions with REMOVE and COPERT European Commission, DG Research
2007	Reform of the Undergraduate Program of Studies of the Department of Mechanical Engineering Greek Ministry of Education - EPEAEK II

Principal Investigator		Exothermia SA
2011	Founding of spin-off Exothermia SA GSRT - PRAXE B	
Principal Investigator		Technological Educational Institute of Thessaly
2011	Generic code for automated 3d discretization of after-treatment devices GSRT - Innovation voucher	
2016-2017	External coupling of catalyst simulation software with OpenFOAM Exothermia SA (Greece)	
Principal Investigator		University of Thessaly
2018-2020	Microscale Computational and Experimental Investigation of the Behaviour of Partially Failed Particulate Filters Greek Ministry of Education - EDBM34	
2020-2021	Support of free-form components in the coupling of catalyst simulation software with OpenFOAM Region of Central Macedonia - Innovation voucher	
2021-2022	Effect of cone geometry on the efficiency of catalytic system during cold start Exothermia SA (Greece)	

TEACHING
EXPERIENCE

University of Thessaly, Programme of Studies of Mechanical Engineering

(Until 2019 known as: TEI of Thessaly, Department of Mechanical Engineering)

Associate Professor

Feb. 2015 - today

Assistant Professor

Sep. 2010 - Jan. 2015

- Ecology and Sustainability
- Meteorology and Digital Systems
- Heat Transfer
- Computational Methods in Transport Phenomena
- Internal Combustion Engines
- Renewable Energy Sources
- Energy Conservation

Supervision of more than 40 diploma theses

Supervision of 3 postdoc researchers (EDBM34)

Host of one foreign PhD student for 2 months (visit funded by the Spanish State)

University of Western Macedonia, Department of Mechanical Engineering

Adjunct Professor

Sep. 2006 - Feb. 2007

- Combustion Phenomena

Aristotle University Thessaloniki, Department of Mechanical Engineering

Adjunct Professor

Feb. 2006 - Jul.2006

- Combustion and Fuels

PUBLICATIONS

26 publications in refereed international journals
16 publications in international conferences with proceedings
8 presentations in international conferences without proceedings
1 book chapter
569 citations from other researchers for 38 documents (Scopus, June 2020)
15 h-index

REFeree SERVICE

Applied Sciences
Chemical Engineering Journal
Chemical Engineering & Technology
Fuel
International Journal of Engine Research
SAE International

SCHOLARSHIPS/AWARDS

2 annual awards from the Technical Chamber of Greece and the Association of Mechanical & Electrical Engineers
2 annual awards from the Greek State Scholarship Foundation (IKY)
Annual scholarship from Greek Telecommunication Organization (OTE)
Arch T. Colwell Merit Award for SAE paper 2004-01-0696

FOREIGN LANGUAGES

Greek, mother tongue
English, proficiency
German, elementary

REFereed
JOURNAL
PUBLICATIONS

- p1. Haralampous O., Koltsakis G. C., Intra-layer temperature gradients during re-generation of diesel particulate filters, *CHEM ENG SCI* 57 (13): 2345-2355 JUL 2002
- p2. Kandylas I. P., Haralampous O. A. , Koltsakis G. C., Diesel soot oxidation with NO₂: Engine experiments and simulations, *IND ENG CHEM RES* 41 (22): 5372-5384 OCT 30 2002
- p3. Haralampous Onoufrios A., Kandylas Ioannis P., Koltsakis Grigorios C., Samaras Zissis C., Diesel Particulate Filter Pressure Drop. Part I: Modeling and Experimental Validation. *Journal of Engine Research*, Vol. 5, No. 2, 149-162, JER 02202, 2004
- p4. Onoufrios A., Kandylas Ioannis P., Koltsakis Grigorios C., Samaras Zissis C., Diesel Particulate Filter Pressure Drop. Part II: On board Calculation of Soot Loading. *Journal of Engine Research*, Vol. 5, No. 2, 163-173, JER 02302, 2004
- p5. Haralampous O. A., Kandylas I. P., Koltsakis G. C., Samaras Z. C., Experimental evaluation of apparent soot oxidation rates in diesel particulate filters, *INT J VEHICLE DES* 35 (4): 365-382 2004
- p6. Haralampous O. A., Koltsakis G. C., Back-diffusion Modeling of NO₂ in catalyzed diesel particulate filters, *IND ENG CHEM RES* 43 (4): 875-883 FEB 18 2004
- p7. Haralampous O. A., Koltsakis G. C., Oxygen diffusion modeling in diesel particulate filter regeneration, *AICHE J* 50 (9): 2008-2019 SEP 2004

- p8. Haralampous O. A., Koltsakis G. C., Samaras Z.C., Vogt C. D., Ohara E., Watanabe Y. and Mizutani T., Reaction and Diffusion Phenomena in Catalyzed Diesel Particulate Filters, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2004-01-0696, Detroit, 2004
- p9. Haralampous O. A., Dardiotis C., Koltsakis, G.C. and Samaras Z., Study of Catalytic Regeneration Mechanisms in Diesel Particulate Filters using Coupled Reaction-Diffusion Modeling, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2004-01-1941, Toulouse, 2004
- p10. Koltsakis G. C., Haralampous O. A., Margaritis N. K., Samaras Z. C., Vogt C.-D., Ohara E., Watanabe Y. and Mizutani T., 3-Dimensional Modeling of the Regeneration in SiC Particulate Filters, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2005-01-0953, Detroit, 2005
- p11. Dardiotis C. K., Haralampous O. A., Koltsakis G. C., Catalytic Oxidation Performance of Wall-Flow vs Flow-through Monoliths for Diesel Emissions Control, *IND ENG CHEM RES*, vol. 45, 3520-3530, 2006
- p12. Koltsakis G. C., Konstantinou A., Haralampous O. A., Samaras Z. C., Measurement and Intra-Layer Modeling of Soot Density and Permeability in Wall-flow Filters, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2006-01-0261, Detroit, 2006
- p13. Koltsakis G. C., Margaritis N. K., Haralampous O. A., Samaras Z. C., Development and Experimental Validation of NOx Trap Model for Diesel Exhaust, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2006-01-0471, Detroit, 2006
- p14. Frey M., Wenninger G., Krutzsch B., Koltsakis G. C., Haralampous O. A., Samaras Z. C., 2D simulation of the regeneration performance of a catalysed DPF for heavy-duty applications, *CAPoC7 2006, Topics in Catalysis*, Vols. 42-43, May 2007
- p15. Margaritis N., Haralampous O. A., Koltsakis G. C., Modeling of the NOx Trap and Validation using Ultra-fast Analyzers, *CAPoC7 2006, Topics in Catalysis*, Vols. 42-43, May 2007
- p16. Koltsakis G. C., Haralampous O. A., Samaras Z. C., Kraemer L., Heimlich F., Behnk K., Control Strategies for Peak Temperature Limitation in DPF Regeneration Supported by Validated Modeling, *SAE Transactions: Journal of Fuels & Lubricants*, SAE paper 2007-01-1127, Detroit, 2007
- p17. Dardiotis C. K., Haralampous O. A. and Koltsakis G. C., Catalytic oxidation in wall-flow reactors with zoned coating, *Chemical Engineering Science* 63 (2008) 1142-1153
- p18. Koltsakis G. C., Samaras Z. C., Karvoutzis-Kontakiotis A., Zacharopoulou Th., Haralampous O., Implications of Engine Start-Stop on After-Treatment Operation, *SAE International Journal of Engines* 4(1), SAE paper 2011-01-1243, Detroit 2011
- p19. Koltsakis Grigorios, Haralampous Onoufriou, Depcik Christopher and Ragone J. Colter, "Catalyzed Diesel Particulate Filter Modeling", *Rev Chem Eng* 2013, 29(1), 1-61
- p20. Haralampous O., Kontzias T., "Approximate Pressure Drop and Filtration Efficiency Expressions for Semi-Open Wall-Flow Channels", *Canadian Journal of Chemical Engineering*, 92:1517-1525, 2014
- p21. Haralampous O., Payne S., "Experimental Testing and Mathematical Modelling of Diesel Particle Collection in Flow-Through Monoliths", *International Journal of Engine Research*, 17(10), 1045-1061, 2016

- p22. Zöllner C., Haralampous O., Brüggemann D., "Effect of Engine Operating Conditions on Soot Layer Permeability and Density in Diesel Particulate Filters", *International Journal of Engine Research*, 2019
- p23. Haralampous O., Mastrokalos M., Tzorbatzoglou F. and Dritselis C., "Experimental and Computational Investigation of Particle Filtration Mechanisms in Partially Damaged DPFs", *International Journal of Advances and Current Practices in Mobility*, SAE paper 2019-24-149, 2019
- p24. Dritselis C.D., Tzorbatzoglou F., Mastrokalos M. and Haralampous O., "Numerical Study of Flow and Particle Deposition in Wall-Flow Filters with Intact or Damaged Exit", *Fluids*, 2019, 4(4), 201
- p25. Orihuela M.P., Haralampous O., Chacartegui R., García M. T. and Martínez-Fernández J., "Numerical Simulation of a Wall-Flow Particulate Filter Made of Biomorphic Silicon Carbide Able to Fit Different Fuel/Biofuel Inputs", *Processes*, 2019, 7(12), 945
- p26. Haralampous O., Mastrokalos M., Tzorbatzoglou F. and Dritselis C., "Filtration Efficiency and Pressure Drop Modelling of Particulate Filters with Rear Plug Damage", *International Journal of Engine Research*, Vol. 22(5) 1652-1669, 2021

CONFERENCE
PUBLICATIONS

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- c1. Haralampous O. A., Koltsakis G. C., Samaras Z.C., Partial Regenerations in Diesel Particulate Filters, SAE paper 2003-01-1881, Yokohama, 2003.
- c2. Haralampous O. A., Koltsakis, G.C. Samaras Z. C., Vogt C.D., Ohara E., Watanabe Y. and Mizutani T., Modeling and experimental study of uncontrolled regenerations in SiC filters with Fuel Borne catalyst, SAE paper 2004-01-0697, Detroit, 2004
- c3. Koltsakis G. C., Haralampous O. A., Dardiotis C. K., Samaras Z. C., Vogt C.-D., Ohara E., Watanabe Y. and Mizutani T., Performance of Catalyzed Particulate Filters without Upstream Oxidation Catalyst, SAE paper 2005-01-0952, Detroit, 2005
- c4. Kraemer L., Heimlich F., Predelli O., Manns J., Koltsakis G., Haralampous O., INNOPART: Integrated NOx and Particulate Reduction: Increasing the Maximum Soot Mass Loading, FISITA 2006 World Automotive Congress, Yokohama 2006, F2006P332
- c5. Kraemer L., Heimlich F., Schaeffner J., Gratzke R., Behnk K, Koltsakis G., Haralampous O., Assessing the Maximum Soot Mass Loading of Diesel Particulate Filters by Advanced Modeling and Regeneration Control, SIA, Diesel Engine 2006, Lyon
- c6. Tsinoglou D. N., Haralampous O. A., Koltsakis G. C., Samaras Z. C, Model-based optimization methods of combined DPF+SCR systems, SAE, ICE 2007, Naples
- c7. Koltsakis G., Koutoufaris I., Haralampous O., Tournalias P., Kraemer L., Model-based design of combined DPF-SCR systems for passenger cars, FAD conference 2007, Dresden
- c8. Koltsakis G. C., Haralampous O. A., Koutoufaris I. Z., Potential and challenges of integrating de-NOx catalysts on DPF substrates, SIA, R-2008-05-22, Paris, November 2008
- c9. Koltsakis G. C., Haralampous O. A., Practical applications of multi-dimensional modeling in diesel exhaust after-treatment, SIA , R-2008-07-08, April 2008

- c10. Koltsakis, G. C., Dardiotis, C. K., Samaras, Z. C., Frey, M., Wenninger, G., Krutzsch, B., Haralampous, O. A., Model-based Optimization of Catalyst Zoning in Diesel Particulate Filters, SAE Transactions: Journal of Fuels & Lubricants, SAE paper 2008-01-0445, Detroit, 2008
- c11. Koltsakis G. C., Samaras Z. C, Echtle H., Chatterjee D., Markou P., Haralampous O. A., Flow Maldistribution Effects on DPF Performance, SAE paper 2009-01-1280, Detroit 2009
- c12. Hajireza S., Johannesen L., Wolff T., Koltsakis G., Samaras Z.C., Haralampous O.A., A Modeling and Experimental Investigation on an Innovative Substrate for DPF Applications, SAE Technical Paper 2010-01-0891, Detroit 2010
- c13. Haralampous O., Kontzias Th., "Analytical Estimation of Chemical Kinetics for Modeling of Diesel Oxidation Catalysts", Motor Vehicle and Transport Conference, Timisoara, Romania, 2012
- c14. Gravalos I., Georgiadis A., Kateris D., Haralampous O., Gialamas T., Xyradakis P., Tsiropoulos Z., Bompolas E., Manolakoudis E., "3D soil moisture sensing and imaging", 10th European Conference on Precision Agriculture, ECPA 2015, Tel-Aviv, Israel, 12-16 July 2015
- c15. Haralampous O., Mastellos D., "A Multi-channel Mathematical Model For Partially Failed Diesel Particulate Filters", 8th GRACM, Volos, July 2015
- c16. Haralampous O., Mastrokalos M., Tzorbatzoglou F. and Dritselis C., "Experimental and Computational Investigation of Particle Filtration Mechanisms in Partially Damaged DPFs", SAE paper 2019-24-149, Capri, Napoli, 15-19 Sep. 2019 (published also in *International Journal of Advances and Current Practices in Mobility* p23)

CONFERENCES
WITHOUT
PROCEEDINGS

-
- d1. Koltsakis G., Margaritis N., Samaras Z., Haralampous O., Tsinoglou D., Modeling of Diesel DeNOx Aftertreatment Components, MinNOx, Berlin 2007
 - d2. Koltsakis G.C, Haralampous O.A, Exhaust System Simulation for Emission Control Optimization, VPC 2007
 - d3. Koltsakis G. C., Kraemer L., Schaeffner J., Haralampous O. A., Challenges and model-based solutions for SCR system design/calibration in passenger cars, IQPC 2008
 - d4. Koltsakis G.C, Haralampous O.A, Multi-dimensional Modeling of Catalyzed Particulate Filters, CTI, Stuttgart January 2008
 - d5. Atmakidis Th., Haralampous O.A, Koltsakis G.C, Modeling complex exhaust gas after-treatment by Star-CD/axisuite coupling, Star European Conference 2011, Amsterdam
 - d6. Haralampous O., Dritselis C., "Modeling of the loading in partially damaged DPFs", MODEGAT IV, Bad-Herrenalb, September 2015
 - d7. Haralampous O., Payne S., "Measurement and Modeling of PM Loading in Bare and Catalytic Flow-Through Monoliths", 20th ETH-Conference on Combustion Generated Nanoparticles, Zurich , 13 June 2016
 - d8. Papanotas N., Oikonomou C., Haralampous O., "A methodology for evaluating the operation of floating solar panels in the Aegean Sea", 9th International Conference on Energy, Sustainability and Climate Crisis (ESCC), Paphos, August 29-September 2, 2022

- b1. Haralampous O. and Koltsakis G., "3D Simulation Models for After-Treatment Systems" in Onorati A. and Montenegro G. (ed) "1D and Multi-D Modeling Techniques for IC Engine Simulation", SAE International, ISBN 978-0-7680-9352-0, 2020