

Georgios Koutsakis, Ph.D.

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RESEARCH INTERESTS

Energy, Heat Transfer, Reactive Flows, Fracture Mechanics, Coatings

EDUCATION

- 2022 Ph.D. in Mechanical Engineering**
University of Wisconsin–Madison, Madison, Wisconsin, USA
Thesis: “Unsteady Heat Conduction and Fracture Mechanics in Multilayer Engine Coatings”
Faculty Advisor: Jaal B. Ghandhi, Grainger Professor of Sustainable Energy
- 2016 Diploma in Mechanical Engineering**
University of Western Macedonia, Kozani, Greece

RESEARCH EXPERIENCE

- 2022 – Postdoctoral Fellow in Materials Science and Mechanical Engineering**
School of Engineering and Applied Sciences
Harvard University, Cambridge, Massachusetts, USA
Faculty Advisor: David R. Clarke, Extended Tarr Family Professor of Materials
Funding: U.S. Office of Naval Research (ONR); U.S. Department of Energy; Advanced Research Projects Agency - Energy (DOE ARPA-E); U.S. Air Force Office of Scientific Research (AFOSR)

PUBLICATIONS

9. **Koutsakis, G.** and J.B. Ghandhi, “Optimization of Thermal Barrier Coating Performance and Durability over a Drive Cycle”, *International Journal of Engine Research* (2022)
8. **Koutsakis, G.**, M.R. Begley, J.W. Hutchinson and J.B. Ghandhi, “Fracture-based Transient Thermo-mechanical Analysis of Reciprocating Engine Thermal Barrier Coatings”, *Engineering Fracture Mechanics* (2022)
7. **Koutsakis, G.**, and J.B. Ghandhi, “Analytical Solution of Unsteady Heat Conduction in Multilayer Internal Combustion Engine Walls”, *Applied Thermal Engineering* (2022)
6. **Koutsakis, G.**, J. Saputo, E. Gingrich, M. Tess, S. Sampath and J.B. Ghandhi, “Delamination Failure on High-Output Diesel Engine Thermal Barrier Coatings”, *SAE Technical Paper* (2022)
5. Babu. A, **G. Koutsakis**, S. Kokjohn, M. Andrie, “Experimental and Analytical Study of Temperature Swing Piston Coatings in a Medium-Duty Diesel Engine”, *SAE Technical Paper* (2022)
4. Ghandhi, J. B. and **G. Koutsakis**, “Comment on “Numerical Approach to Define a Thermodynamically Equivalent Material for the Conjugate Heat Transfer Simulation of Very Thin Coating Layers” by P. Olmeda, X. Margot, P. Quintero, J. Escalona, *International Journal of Heat and Mass Transfer*, Vol. 162 (2020) 120377”, *International Journal of Heat and Mass Transfer* (2021)
3. **Koutsakis, G.**, S. R. Miles and J. B. Ghandhi, “Assessment of In-Cylinder Thermal Barrier Coatings over a Full Vehicle Drive Cycle.” *SAE Technical Paper*, No. 2021-01-0456 (2021)
2. **Koutsakis, G.**, and J. B. Ghandhi, “An Analytical Approach for Calculating Instantaneous Multilayer-Coated Wall Surface Temperature in an Engine.” *SAE International Journal of Advances and Current Practices in Mobility* 2, No. 2020-01-0160 (2020): 1303-1313
(This paper received the Myers Award for Outstanding Student Paper and won the Student/Young Professional Tech Paper Competition in SAE WCX 2020)
1. **Koutsakis, G.**, G. F. Nellis, and J. B. Ghandhi, “Surface Temperature of a Multi-layer Thermal Barrier Coated Wall Subject to an Unsteady Heat Flux.” *International Journal of Heat and Mass Transfer* 155 (2020): 119645

INVITED TALKS

7. SAE WCX, Detroit MI 2022
6. John Deere, Engine Engineering Technical Seminar, Waterloo IA 2022
5. Engine Research Center Seminar, Madison WI 2021
4. MIT, Boston MA 2021
3. Direct-injection Engine Research Consortium Meeting, Madison WI 2020
2. SAE COMVEC (Commercial Vehicle Powertrain) Conference, Detroit MI 2020
1. Engine Research Center Seminar, Madison WI 2019

TEACHING EXPERIENCE

Teaching Assistant

Responsibilities included co-teaching lab sections, delivering review lectures prior to exams, helping students with homework/lab assignments, grading all assignments, and advising students

Elementary Heat Transfer, Mechanical Engineering, University of Wisconsin–Madison, Madison, Wisconsin, USA (Spring 2020)

Private Tutoring, Thessaloniki/Kozani, Greece

2010 – 2017

Prepared high school students for national qualification exams in Maths and Physics. Gave lectures and tutored small groups of undergraduate fellow mechanical and chemical engineering students from University of Western Macedonia and Aristotle University of Thessaloniki for their final exams.

FELLOWSHIPS AND AWARDS

Fellowships

Mechanical Engineering Fellowship, University of Wisconsin–Madison 2020

Awards

SAE Myers Award for Outstanding Student Paper 2020

SAE Student/Young Professional Tech Paper Competition 2020

Gerondelis Foundation, Inc. Scholarship 2018

Academic Recognition

Technical Chamber of Greece (TEE-TCG) for Academic Excellence 2018

Dept. of Mechanical Engineering, UoWM, Greece 2014

Thermaikos Municipality, Thessaloniki, Greece 2011

PROFESSIONAL SERVICE

Reviewer

International Journal of Engine Research 2022 –

Journal of Energy Engineering Reviewer 2022 –

SAE WCX 2020 –

Committee Work

SAE Myers Award Committee Member 2021 –

Professional Affiliations

American Institute of Aeronautics and Astronautics (AIAA) 2022 –

American Society of Mechanical Engineers (ASME) 2021 –

Society of Automotive Engineers (SAE) 2018 –