

Ahmet Emre Karataş, Ph.D., P.Eng.

Associate Professor · Aerospace Engineering · Toronto Metropolitan University

350 Victoria Street, Toronto, Ontario, Canada M5B 2K3 · karatas@torontomu.ca · +1 (416) 979-5000 ext. 556432 · <https://www.torontomu.ca/akaratas/>

[Google Scholar](#) ORCID: [0009-0009-6260-0347](#) Total citations: >1000 / h-index: 14 / i10: 18

1. Academic Summary

Academic focus	Experimental combustion and propulsion, with emphasis on the formation, morphology, and maturity of soot in laminar diffusion flames. Development and application of optical diagnostics, including spectral soot emission, line-of-sight attenuation, and laser-induced incandescence. Combustion of alternative and low-carbon fuels, including ammonia, hydrogen, and biofuels, and their influence on soot and pollutant formation. Related activity in electrified aircraft propulsion.
Publication record	36 journal articles, 53 conference papers, 7 poster presentations, 1 technical report, 3 media features, and 7 invited seminars or keynote lectures.
Funding record	Total funding recorded in the CV: \$1,203,882, including \$820,488 in external research support and \$383,394 in internal awards held or secured.
Graduate training	Supervision record: 0 Ph.D. completed and 4 in progress. 5 M.A.Sc. completed. 5 M.Eng. completed. 2 research assistants completed. 10 undergraduate research students completed. Graduate examinations: 12 master's-level and 9 Ph.D.-level examinations.

2. Education

2014	Doctor of Philosophy	Institute for Aerospace Studies, University of Toronto <ul style="list-style-type: none"> Recognized by the G.N. Patterson Award for best Ph.D. dissertation
2009	Master of Applied Science	Institute for Aerospace Studies, University of Toronto
2007	Bachelor of Science	Aerospace Engineering, Middle East Technical University

3. Appointments

2024/04–Present	Associate Professor	Aerospace Engineering, Toronto Metropolitan University <ul style="list-style-type: none"> Member of the Graduate Programs in Aerospace Engineering and Mechanical, Industrial, and Mechatronics Engineering
2019/08–2024/04	Assistant Professor	Aerospace Engineering, Toronto Metropolitan University
2024/12–Present	Member	Roster of Climate and Infrastructure Experts, Climate Ready Infrastructure Service, Climate Ready Canada <ul style="list-style-type: none"> National expert roster supporting climate resilience and infrastructure decision-making for local governments and communities across Canada.
2024/04–Present	Member	Centre for Advancing Engineering, Research and Innovation in Aerospace (AERIAS), Toronto Metropolitan University <ul style="list-style-type: none"> Interdisciplinary aerospace innovation centre connecting specialized faculty expertise and engineering talent with academic and industry projects.
2020/07–Present	Affiliate Scientist	Institute for Biomedical Engineering, Science and Technology, St. Michael's Hospital <ul style="list-style-type: none"> Research affiliation within a TMU and St. Michael's Hospital partnership that connects engineering, science, biomedical research, and clinical expertise to support testable health-care solutions.
2021/06–Present	Adjunct Professor, Status Only	Institute for Aerospace Studies, University of Toronto

4. Previous Positions

2026/03–2026/04	Visiting Professor (sabbatical)	Combustion Group, Middle East Technical University
2026/01–2026/02	Visiting Professor (sabbatical)	Energy Conversion & Combustion Group (EC ² G), Universidad Técnica

Federico Santa María

2017/01–2019/07	Research Fellow and Lecturer	Institute for Aerospace Studies, University of Toronto
2018/05–2019/07	Aviation Academic Coordinator	School of Aviation, Seneca College
2016/01–2018/03	Aviation Academic Liaison	School of Aviation, Seneca College
2015/01–2019/07	Professor	School of Aviation, Seneca College

5. Honours and Scholarships

2014	G.N. Patterson Award	Best PhD dissertation, Institute for Aerospace Studies, University of Toronto
2013	Summer School Scholarship	Beihang University International Summer School
2004–2007	Dean's High Honour Roll	Middle East Technical University

6. Publications and Scholarly Outputs

Publication Summary

Output Type	Count / Identifier
Journal publications	36 published/accepted (+ 6 under preparation, submitted, or under review)
Conference papers	53 published/accepted
Poster presentations	7 presented
Media features	3
Invited seminars/keynote lectures	7
Technical reports	1
Google Scholar Profile	ID rqmh6IAAAAAJ

Journal Venues

Journal / Venue	Impact Factor as of 2025
Combustion and Flame (10 publications)	5.77
Proceedings of the Combustion Institute (10 publications)	6.54
Fuel (3 publications)	8.04
Combustion Science and Technology (2 publications)	2.13
Indoor and Built Environment (2 publications)	3.07
PLOS One (1 publication)	2.9
Progress in Energy and Combustion Science (1 publication)	35.34
IEEE Access (1 publication)	3.37
Applied Optics (1 publication)	1.7
Instrumentation Science & Technology (1 publication)	1.5
Energy & Fuels (1 publication)	4.65
Experimental Thermal and Fluid Science (1 publication)	3.37
Aerospace (1 publication)	2.66
International Health Trends and Perspectives (1 publication)	N/A

Journal Manuscripts Under Preparation, Submitted, or Under Review

Trainee names are underlined; the name of A.E. Karataş is shown in bold.

- Gnanasegaram, K., Hashemi, S.M., and Karataş, A.E., “Series hybrid-electric propulsion of a regional turboprop: Performance assessment of a retrofitted DHC-8 Q400,” under preparation.
- Sharjeel, A., Lordly, K., Crivellaro Grenier, T., Martin, D., and **Karataş, A.E.**, “A numerical examination of cough droplet behaviours and experimental framework for mask assessment,” under preparation.
- Öner, O., Dworkin, S.B., and **Karataş, A.E.**, “A 3D-printed optical design for three-wavelength snapshot imaging using a single monochrome camera,” under preparation.
- Cormier, D., **Karataş, A.E.**, and Gülder, Ö.L., “Broadband pyrometry improves the accuracy of laser-induced incandescence,” under preparation.
- Rajan, Y.T., **Karataş, A.E.**, and Gülder, Ö.L., “Influence of hydrogen enrichment on soot processes in co-flow ethylene laminar diffusion flames,” submitted to *International Journal of Hydrogen Energy*.
- Öner, O., Dworkin, S.B., and **Karataş, A.E.**, “Pressure effects on ammonia driven chemical soot suppression in methane diffusion flames,” submitted to *Fuel*.

Peer-Reviewed Journal Publications

Trainee names are underlined; the name of A.E. Karataş is shown in bold.

No.	Citation
J.36	<u>Chiu, A.</u> , Karataş, A.E. , and Eaves, N., “Mechanistic origin of the sudden reversal of soot formation in oxygen-enriched ethylene flames,” <i>Proceedings of the Combustion Institute</i> , accepted, 2026.
J.35	<u>Nobakht, A.</u> and Karataş, A.E. , “Mapping soot formation and sudden reversal in oxygen-enriched ethylene laminar flames at elevated pressures,” <i>Proceedings of the Combustion Institute</i> , accepted, 2026.
J.34	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., “Ex-situ morphology characterization of soot in preheated laminar co-flow diffusion flames,” <i>Proceedings of the Combustion Institute</i> , accepted, 2026.
J.33	Kazemi, S., <u>Nobakht, A.</u> , Kholghy, M.R., and Karataş, A.E. , “Understanding the impact of hydrogen on soot formation in high-pressure methane diffusion flames,” <i>Proceedings of the Combustion Institute</i> , accepted, 2026.
J.32	<u>Nobakht, A.</u> , Cepeda, F., and Karataş, A.E. , “Pressure effects on soot formation and maturity in propane-ammonia diffusion flames,” <i>Proceedings of the Combustion Institute</i> , accepted, 2026.
J.31	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., “Soot characteristics in laminar co-flow ethylene flames under reactant preheating conditions,” <i>Fuel</i> , Vol. 426, 139583, 2026. [pdf] [supplemental]
J.30	<u>Öner, O.</u> , Dworkin, S.B., and Karataş, A.E. , “Design and fabrication of a 3D-printed integrating sphere: A cost-effective alternative for light extinction measurements,” <i>Instrumentation Science & Technology</i> , pp. 1–19, 2026. [pdf]
J.29	<u>Nobakht, A.</u> and Karataş, A.E. , “Pressure dependence of synergistic soot formation in ethylene/propane co-flow diffusion flames,” <i>Combustion and Flame</i> , Vol. 285, 114755, 2026. [pdf] [supplemental]
J.28	<u>Öner, O.</u> , Basta, L., Commodo, M., Minutolo, P., Dworkin, S.B., D’Anna, A., and Karataş, A.E. , “On the effect of ammonia addition on soot formation and nanostructure in laminar coflow flames of n-butane,” <i>Proceedings of the Combustion Institute</i> , Vol. 41, 105968, 2025. [pdf]
J.27	<u>Öner, O.</u> , Cepeda, F., Dworkin, S.B., and Karataş, A.E. , “Near-infrared multi-spectral imaging with Bayer-filter colour cameras: A single-exposure approach for soot and temperature diagnostics,” <i>Applied Optics</i> , Vol. 64, no. 21, pp. 6085–6095, 2025. [pdf] [supplemental]
J.26	Cepeda, F., Eaves, N., <u>Serwin, M.</u> , Karataş, A.E. , and Dworkin, S.B., “Mechanisms of soot formation in periodically forced laminar diffusion flames,” <i>Fuel</i> , Vol. 398, 135510, 2025. [pdf]
J.25	Cepeda, F., <u>Nobakht, A.</u> , Verdugo, I., Fuentes, A., Dworkin, S.B., and Karataş, A.E. , “The effect of pressure over soot maturity in laminar ethylene flames,” <i>Combustion and Flame</i> , Vol. 254, 113977, 2025. [pdf]
J.24	<u>Lordly, K.</u> , Karataş, A.E. , Lin, S., Umapathy, K., and Mohindra, R., “Effectiveness of a suction device for containment of pathogenic aerosols and droplets,” <i>PLOS ONE</i> , Vol. 19, no. 7, e0305842, 2024. [pdf]
J.23	<u>Jadidi, M.</u> , Karataş, A.E. , and Dworkin, S.B., “Estimating droplet size and count distributions over a prolonged period of time following a cough in indoor environments,” <i>Indoor and Built Environment</i> , Vol. 33, no. 10, pp. 1883–1896, 2024. [pdf]
J.22	<u>Cepeda, F.</u> , Dworkin, S.B., and Karataş, A.E. , “Investigation of soot suppression by ammonia addition to laminar ethylene

No.	Citation
	flames at varying pressure," <i>Combustion and Flame</i> , Vol. 251, 112728, 2023. [pdf]
J.21	<u>Serwin, M.</u> and Karataş, A.E. , "Effects of intramolecular oxygen and partial premixing on soot formation in ethane/ethanol flames," <i>Combustion and Flame</i> , Vol. 251, 112690, 2023. [pdf]
J.20	<u>Hui, C.</u> , <u>McQueen, M.</u> , Nahle, R., Karataş, A.E. , and Şekercioğlu, F., "Impacts of the COVID-19 pandemic lockdown on travel and transportation preferences and perceived air quality in Toronto," <i>International Health Trends and Perspectives</i> , Vol. 3, no. 1, pp. 115–137, 2023. [pdf]
J.19	<u>Serwin, M.</u> and Karataş, A.E., "Effects of mechanically-induced oscillations on soot formation and flame temperature in laminar diffusion flames of ethylene," <i>Proceedings of the Combustion Institute</i> , Vol. 39, pp. 1049–1058, 2023. [pdf]
J.18	Cepeda, F., Di Liddo, L., <u>Serwin, M.</u> , Karataş, A.E., and Dworkin, S.B., "On the sudden reversal of soot formation by oxygen addition in DME flames," <i>Proceedings of the Combustion Institute</i> , Vol. 39, pp. 1997–2005, 2023. [pdf]
J.17	<u>McQueen, M.</u> , Karataş, A.E. , Bramesfeld, G., and Arenas, O., "Model-based analysis of lithium-ion battery technology predictions in light-sport aircraft," <i>IEEE Access</i> , Vol. 10, pp. 109299–109310, 2022. [pdf]
J.16	<u>Lordly, K.</u> , Kober, L., Jadidi, M., Antoun, S., Dworkin, S.B., and Karataş, A.E. , "Understanding lifetime and dispersion of cough-emitted droplets in air," <i>Indoor and Built Environment</i> , Vol. 32, no. 10, pp. 1929–1948, 2022. [pdf]
J.15	<u>McQueen, M.</u> , Karataş, A.E. , Bramesfeld, G., Demir, E., and Arenas, O., "Feasibility study of electrified light-sport aircraft powertrains," <i>Aerospace</i> , Vol. 9, no. 4, 224, 2022. [pdf]
J.14	<u>Serwin, M.</u> and Karataş, A.E. , "A calibration-free two-dimensional spectral soot emission platform for temperature and soot measurements," <i>Experimental Thermal and Fluid Science</i> , Vol. 130, 110493, 2022. [pdf]
J.13	<u>Serwin, M.</u> and Karataş, A.E. , "Effects of oxygen on soot formation in laminar co-flow flames of binary mixtures of ethane, DME, and oxygen," <i>Combustion and Flame</i> , Vol. 229, 111413, 2021. [pdf]
J.12	<u>Yang, S.</u> , Karataş, A.E. , and Gülder, Ö.L., "Effect of hydrogen enrichment of laminar ethylene diffusion flames on thermal structure and soot yields at pressures up to 10 bar," <i>Proceedings of the Combustion Institute</i> , Vol. 38, pp. 2507–2516, 2021. [pdf]
J.11	Karataş, A.E. , <u>Gigone, B.</u> , and Gülder, Ö.L., "Soot aggregate morphology deduced from thermophoretic sampling in coflow laminar methane diffusion flames at pressures up to 30 bar," <i>Combustion and Flame</i> , Vol. 222, pp. 411–422, 2020. [pdf]
J.10	Commodo, M., Karataş, A.E. , De Falco, G., Minutolo, P., D'Anna, A., and Gülder, Ö.L., "On the effect of pressure on soot nanostructure: A raman spectroscopy investigation," <i>Combustion and Flame</i> , Vol. 219, pp. 13–19, 2020. [pdf]
J.9	<u>Gigone, B.</u> , Karataş, A.E. , and Gülder, Ö.L., "Soot aggregate morphology in coflow laminar ethylene diffusion flames at elevated pressures," <i>Proceedings of the Combustion Institute</i> , Vol. 37, pp. 841–848, 2019. [pdf]
J.8	<u>Wang, W.</u> , Karataş, A.E. , Groth, C.P.T., and Gülder, Ö.L., "Experimental and numerical study of laminar flame extinction for syngas and syngas-methane blends," <i>Combustion Science and Technology</i> , Vol. 190, pp. 1455–1471, 2018. [pdf]
J.7	<u>Wang, W.</u> , Karataş, A.E. , Groth, C.P.T., and Gülder, Ö.L., "Combined experimental and numerical study of ethanol laminar flame extinction," <i>Combustion Science and Technology</i> , Vol. 190, pp. 1472–1487, 2018. [pdf]
J.6	Karataş, A.E. and Gülder, Ö.L., "Effects of carbon dioxide and nitrogen addition on soot processes in laminar diffusion flames of ethylene-air at high pressures," <i>Fuel</i> , Vol. 200, pp. 76–80, 2017. [pdf]
J.5	Liu, F., Karataş, A.E. , Gülder, Ö.L., and Gu, M., "Numerical and experimental study of the influence of CO ₂ and N ₂ dilution on soot formation in laminar coflow C ₂ H ₄ /air diffusion flames at pressures between 5 and 20 atm," <i>Combustion and Flame</i> , Vol. 162, pp. 2231–2247, 2015. [pdf]
J.4	Karataş, A.E. and Gülder, Ö.L., "Dependence of sooting characteristics and temperature field of co-flow laminar pure and nitrogen-diluted ethylene-air diffusion flames on pressure," <i>Combustion and Flame</i> , Vol. 162, pp. 1566–1574, 2015. [pdf]
J.3	Karataş, A.E. , Intasopa, G., and Gülder, Ö.L., "Sooting behaviour of n-heptane laminar diffusion flames at high pressures," <i>Combustion and Flame</i> , Vol. 160, pp. 1650–1656, 2013. [pdf]
J.2	Karataş, A.E. and Gülder, Ö.L., "Soot formation in high-pressure laminar diffusion flames," <i>Progress in Energy and Combustion Science</i> , Vol. 38, pp. 818–845, 2012. [pdf]
J.1	Karataş, A.E. , Commodo, M., and Gülder, Ö.L., "Soot formation in co-flow and counter-flow laminar diffusion flames of

No.	Citation
	binary mixtures of ethylene and butane isomers and synergistic effects," <i>Energy & Fuels</i> , Vol. 24, pp. 4912–4918, 2010. [pdf]

Conference Papers

Trainee names are underlined; the name of A.E. Karataş is shown in bold.

No.	Citation
C.53	<u>Chiu, A.</u> , Karataş, A.E. , and Eaves, N., "Mechanistic origin of the sudden reversal of soot formation in oxygen-enriched ethylene flames," 41 st International Symposium on Combustion, Kyoto, Japan, July 26–31, 2026. [presentation]
C.52	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., "Ex-situ morphology characterization of soot in preheated laminar co-flow diffusion flames," 41 st International Symposium on Combustion, Kyoto, Japan, July 26–31, 2026. [presentation]
C.51	<u>Nobakht, A.</u> and Karataş, A.E. , "Mapping soot formation and sudden reversal in oxygen-enriched ethylene laminar flames at elevated pressures," 41 st International Symposium on Combustion, Kyoto, Japan, July 26–31, 2026. [presentation]
C.50	Kazemi, S., <u>Nobakht, A.</u> , Kholghy, M.R., and Karataş, A.E. , "Understanding the impact of hydrogen on soot formation in high-pressure methane diffusion flames," 41 st International Symposium on Combustion, Kyoto, Japan, July 26–31, 2026. [presentation]
C.49	<u>Nobakht, A.</u> , Cepeda, F., and Karataş, A.E. , "Pressure effects on soot formation and maturity in propane-ammonia diffusion flames," 41 st International Symposium on Combustion, Kyoto, Japan, July 26–31, 2026. [presentation]
C.48	<u>Çelik, E.B.</u> , Karataş, A.E. , Eaves, N., and Karaca, M., "Effect of DME addition on soot formation in ethane coflow diffusion flames," Joint Meeting of the Italian and Spanish Sections of the Combustion Institute, Sorrento, Italy, May 26–29, 2026. [paper] [presentation]
C.47	<u>Cormier, D.D.E.</u> , Gülder, Ö.L., and Karataş, A.E. , "Broadband pyrometry improves the accuracy of laser-induced incandescence," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.46	<u>Chiu, A.</u> , Karataş, A.E. , and Eaves, N., "Mechanistic origin of the sudden reversal of soot formation in oxygen-enriched ethylene flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.45	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., "Ex-situ morphology characterization of soot in preheated laminar co-flow diffusion flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.44	Kazemi, S., <u>Nobakht, A.</u> , Kholghy, M.R., and Karataş, A.E. , "Understanding the impact of hydrogen on soot formation in high-pressure methane diffusion flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.43	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., "Coupled effects of hydrogen and ammonia addition in high-pressure ethylene diffusion flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.42	<u>Nobakht, A.</u> , Karataş, A.E. , and Cepeda, F., "Pressure effects on soot formation and maturity in propane-ammonia diffusion flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.41	<u>Öner, O.</u> , Karataş, A.E. , and Dworkin, S.B., "Pressure effects on ammonia driven chemical soot suppression in methane diffusion flames," CICS Spring Technical Meeting, Montreal, Canada, May 11–14, 2026. [paper] [presentation]
C.40	<u>Öner, O.</u> , Cepeda, F., Dworkin, S.B., and Karataş, A.E. , "A robust calibration method for colour cameras: Analyzing soot maturity in ethylene diffusion flames," 11th International Symposium on Radiative Transfer RAD-25, Kuşadası, Turkey, June 15–20, 2025. [paper]
C.39	<u>Nobakht, A.</u> and Karataş, A.E. , "From formation to maturation: synergistic effect on soot formation in ethylene/propane flames at elevated pressures," 13 th Mediterranean Combustion Symposium, Corfu, Greece, June 1–5, 2025. [paper] [presentation]
C.38	<u>Öner, O.</u> , Basta, L., Commodo, M., Minutolo, P., Dworkin, S.B., D'Anna, A., and Karataş, A.E. , "On the effect of ammonia addition on soot formation and nanostructure in laminar coflow flames of n-butane," 13 th Mediterranean Combustion Symposium, Corfu, Greece, June 1–5, 2025. [paper] [presentation]
C.37	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., "Effect of reactant preheating on soot properties in laminar diffusion flames of ethylene," 13th Mediterranean Combustion Symposium, Corfu, Greece, June 1–5, 2025. [paper] [presentation]

No.	Citation
C.36	<u>Chiu, A.</u> , Eaves, N., and Karataş, A.E. , “The sudden reversal of soot formation with the addition of partially premixing oxygen with ethylene in laminar coflow diffusion flames,” CICS Spring Technical Meeting, Calgary, Canada, May 12–15, 2025. [paper] [presentation]
C.35	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., “Soot morphology characterization in laminar diffusion flames with reactant preheating,” CICS Spring Technical Meeting, Calgary, Canada, May 12–15, 2025. [paper] [presentation]
C.34	<u>Rajan, Y.T.</u> , Karataş, A.E. , and Gülder, Ö.L., “Effects of hydrogen enrichment on soot processes in laminar diffusion flames of ethylene,” CICS Spring Technical Meeting, Kingston, Canada, May 13–16, 2024. [paper] [presentation]
C.33	<u>Nobakht, A.</u> and Karataş, A.E. , “Sudden soot reversal: An elevated pressure study on the impact of oxygen addition in ethylene diffusion flames,” CICS Spring Technical Meeting, Kingston, Canada, May 13–16, 2024. [paper] [presentation]
C.32	<u>Öner, O.</u> , Dworkin, S.B., and Karataş, A.E. , “A new diagnostic for minimizing the flame instabilities: Simultaneous imaging of a flame at three wavelengths,” CICS Spring Technical Meeting, Kingston, Canada, May 13–16, 2024. [paper] [presentation]
C.31	<u>Cepeda, F.</u> , Karataş, A.E. , and Dworkin, S.B., “Ammonia addition to laminar ethylene flames: characterizing soot and NOx formation at elevated pressures,” CICS Spring Technical Meeting, Edmonton, Canada, May 15–18, 2023. [paper] [presentation]
C.30	<u>Rajan, Y.T.</u> , Gülder, Ö.L., and Karataş, A.E. , “Soot temperature and concentration measurements in laminar diffusion flames with reactant preheating,” CICS Spring Technical Meeting, Edmonton, Canada, May 15–18, 2023. [paper] [presentation]
C.29	<u>Sathiyamoorthy, K.</u> , Strohm, E., Nusrat, O., Bok, T., Karataş, A.E. , and Kolios, M.C., “The study of aerosolized droplets with nanometer absorbing structures using a contactless photoacoustic technique and the finite-difference time-domain method,” SPIE Photonics West, San Francisco, USA, January 28–February 2, 2023. [paper]
C.28	<u>Serwin, M.</u> and Karataş, A.E. , “Soot and temperature measurements in nonpremixed and partially-premixed ethane/ethanol flames,” 12th Mediterranean Combustion Symposium, Luxor, Egypt, January 22–26, 2023. [paper] [presentation]
C.27	Cepeda, F., Di Liddo, L., <u>Serwin, M.</u> , Karataş, A.E. , and Dworkin, S.B., “On the sudden reversal of soot formation by oxygen addition in DME flames,” 39 th International Symposium on Combustion, Vancouver, Canada, July 24–29, 2022.
C.26	<u>Serwin, M.</u> and Karataş, A.E. , “Effects of mechanically-induced oscillations on soot formation and flame temperature in laminar diffusion flames of ethylene,” 39 th International Symposium on Combustion, Vancouver, Canada, July 24–29, 2022. [presentation]
C.25	Arenas, O., <u>McQueen, M.</u> , Robertson, D., and Karataş, A.E. , “Implementation of a 200 kW adaptable testing platform for experimental research in electrification of aircraft propulsion,” IEEE/AIAA Transportation Electrification Conference and Electric Aircraft Technologies Symposium ITEC+EATS, Anaheim, CA, USA, June 15–17, 2022. [paper] [presentation]
C.24	Cepeda, F., Di Liddo, L., <u>Serwin, M.</u> , Karataş, A.E. , and Dworkin, S.B., “On the sudden reversal of soot formation by oxygen addition in DME flames,” CICS Spring Technical Meeting, Ottawa, Canada, May 16–19, 2022. [paper]
C.23	<u>Serwin, M.</u> and Karataş, A.E. , “Soot and temperature measurements of oscillating ethylene flames,” CICS Spring Technical Meeting, Ottawa, Canada, May 16–19, 2022. [paper]
C.22	<u>McQueen, M.</u> , Karataş, A.E. , Demir, E., Bramesfeld, G., and Arenas, O., “Feasibility study of a serial hybrid electric powertrain for a light sports aircraft,” Paper No: AIAA 2022-2050, AIAA SciTech Aerospace Sciences Meeting, San Diego, CA, USA, January 3–7, 2022. [paper] [presentation]
C.21	<u>McQueen, M.</u> , Demir, E., Karataş, A.E. , Bramesfeld, G., and Arenas, O., “Modelling of a ground based serial hybrid-electric aircraft drivetrain”, Canadian Aeronautics and Space Institute CASI AERO 2021, virtual, June 14–18, 2021. [paper] [presentation]
C.20	<u>Serwin, M.</u> and Karataş, A.E. , “A sudden reversal in the effect of O ₂ addition into dimethyl ether on soot formation,” 10 th European Combustion Meeting, Naples, Italy, April 14–15, 2021. [paper]
C.19	<u>Yang, S.</u> , Karataş, A.E. , and Gülder, Ö.L., “Effect of hydrogen enrichment of laminar ethylene diffusion flames on thermal structure and soot yields at pressures up to 10 bar,” 38 th International Symposium on Combustion, Adelaide, Australia, January 24–29, 2021. [presentation]
C.18	Karataş, A.E. , <u>Gigone, B.</u> , and Gülder, Ö.L., “Pressure effects on soot morphology in laminar methane diffusion flames,”

No.	Citation
	12 th Asia-Pacific Conference on Combustion, Fukuoka, Japan, July 1–5, 2019.
C.17	<u>Gigone, B.</u> , Karataş, A.E. , and Gülder, Ö.L., “Soot aggregate morphology in laminar methane diffusion flames at elevated pressures up to 30 bar,” 11 th Mediterranean Combustion Symposium, Tenerife, Spain, June 16–20, 2019.
C.16	Commodo, M., Karataş, A.E. , De Falco, G., Minutolo, P., D’Anna, A., and Gülder, Ö.L., “Raman spectroscopy of soot sampled from high-pressure diffusion flames,” 9 th European Combustion Meeting, Lisbon, Portugal, April 14–27, 2019.
C.15	<u>Gigone, B.</u> , Karataş, A.E. , and Gülder, Ö.L., “Pressure dependence of soot aggregate morphology in coflow laminar ethylene diffusion flames,” CICS Spring Technical Meeting, Toronto, Canada, May 14–18, 2018. [abstract]
C.14	<u>Wang, W.</u> , Karataş, A.E. , Groth, C.P.T., and Gülder, Ö.L., “Experimental and numerical study of laminar flame extinction for syngas and syngas-methane blends,” 10 th Mediterranean Combustion Symposium, Naples, Italy, September 17–21, 2017.
C.13	<u>Wang, W.</u> , Karataş, A.E. , Groth, C.P.T., and Gülder, Ö.L., “Combined experimental and numerical study of ethanol laminar flame extinction,” 10 th Mediterranean Combustion Symposium, Naples, Italy, September 17–21, 2017.
C.12	Karataş, A.E. and Gülder, Ö.L., “Pressure dependence of sooting propensity in laminar diffusion flames of ethylene–air diluted with carbon dioxide and nitrogen,” 36 th International Symposium on Combustion, Seoul, Korea, July 31–August 21, 2016.
C.11	Ghasemi, S., Cormier, D., Karataş, A.E. , and Gülder, Ö.L., “Effect of combustion pressure on soot aerosol formation and characteristics,” International Conference on Atmospheric Dust, DUST 2014: HE18 - Multicomponent Aerosol of Fossil Fuel and Biomass Burning, Castellaneta Marina, Italy, June 1–6, 2014.
C.10	Liu, F., Karataş, A.E. , and Gülder, Ö.L., “Numerical and experimental study of the influence of CO ₂ and N ₂ dilution on soot formation in laminar coflow C ₂ H ₂ /Air diffusion flames between 5 and 20 atm,” CICS Spring Technical Meeting, Windsor, Canada, May 12–15, 2014. [paper]
C.9	<u>Wang, W.</u> , Karataş, A.E. , Groth, C.P.T., and Gülder, Ö.L., “An experimental and numerical study of the effect of nozzle separation distance on the extinction strain rate in counterflow laminar diffusion flame burners,” CICS Spring Technical Meeting, Windsor, Canada, May 12–15, 2014. [paper]
C.8	<u>Daca, A.</u> , Karataş, A.E. , and Gülder, Ö.L., “Influence of nitrogen dilution on soot yield and temperature field of a laminar ethylene–air diffusion flame at 10 atm,” CICS Spring Technical Meeting, Windsor, Canada, May 12–15, 2014. [paper]
C.7	Karataş, A.E. and Gülder, Ö.L., “Soot formation in laminar diffusion flames of diluted ethylene in air at pressures up to 20 atm,” Paper No: AIAA 2014-0652, AIAA SciTech Aerospace Sciences Meeting, National Harbor, MD, USA, January 13–17, 2014. [paper]
C.6	Karataş, A.E. and Gülder, Ö.L., “Influence of pressure on soot formation in laminar diffusion flames of ethylene diluted with carbon dioxide or nitrogen at pressures up to 20 atm,” 24 th International Symposium on Transport Phenomena, Yamaguchi, Japan, November 1–5, 2013. [paper]
C.5	Karataş, A.E. and Gülder, Ö.L., “Influence of carbon dioxide and nitrogen dilution on soot formation in laminar diffusion flames of ethylene/air at pressures up to 20 atm,” Eighth Mediterranean Combustion Symposium, İzmir, Turkey, September 8–13, 2013. [paper] [presentation]
C.4	Karataş, A.E. , Intasopa, G., and Gülder, Ö.L., “Sooting behaviour of n-heptane laminar diffusion flames of n-heptane diluted with nitrogen or helium at pressures from 2 to 7 atmospheres,” Proceedings of the 9 th Asia-Pacific Conference on Combustion, Gyeongju, Korea, May 19–22, 2013.
C.3	Karataş, A.E. and Gülder, Ö.L., “Extinction characteristics of liquid hydrocarbon diffusion flames and multiple solutions to flame stability,” CICS Spring Technical Meeting, Laval, Canada, May 13–16, 2013. [paper] [presentation]
C.2	Karataş, A.E. and Gülder, Ö.L., “Sooting behaviour of laminar diffusion flames of n-heptane at super atmospheric pressures,” CICS Spring Technical Meeting, Toronto, Canada, May 13–16, 2012. [paper]
C.1	Karataş, A.E. and Gülder, Ö.L., “Soot formation in co-flow and counterflow laminar diffusion flames of fuel mixtures,” CICS Spring Technical Meeting, Montréal, Canada, May 9–13, 2009. [paper] [presentation]

Poster Presentations

Trainee names are underlined; the name of A.E. Karataş is shown in bold.

No.	Citation
P.7	<u>Celik, E.B.</u> , Karaca, M., and Karataş, A.E. , “Baseline simulation of a 1 atm RP-3 laminar coflow diffusion flame with CoFlame,” European Cooperation in Science and Technology (COST) Action CA22151, Cyber-Physical Systems and Digital Twins for the Decarbonisation of Energy-Intensive Industries (CYPHER), 3rd General Meeting, Istanbul Technical University, Istanbul, Türkiye, May 6–8, 2026. [poster]
P.6	<u>Öner, O.</u> , Cepeda, F., Dworkin, S.B., and Karataş, A.E. , “Near-infrared multi-spectral imaging with Bayer-filter colour cameras: A single-exposure approach for soot diagnostics,” 1st Asia-Pacific Combustion Institute Summer School, Viña del Mar, Chile, November 14, 2025. [poster]
P.5	<u>Zhang, J.</u> and Karataş, A.E. , “3D-printed soot recirculation mechanism for industry models,” Undergraduate Research Opportunities Showcase, Toronto Metropolitan University, Toronto, Canada, September 29, 2025. [poster]
P.4	<u>Mangat, A.</u> and Karataş, A.E. , “Propulsion and clean energy,” Undergraduate Research Opportunities Showcase, Toronto Metropolitan University, Toronto, Canada, September 16, 2024. [poster]
P.3	<u>McQueen, M.</u> , Arenas, O., Karataş, A.E. , and Bramesfeld, G., “Serial hybrid-electric drivetrain research initiative (SEED-R),” NRC TechX, June 14–18, 2021. [poster]
P.2	<u>Serwin, M.</u> and Karataş, A.E. , “A sudden reversal in the effect of O ₂ addition into dimethyl ether on soot formation,” 10 th European Combustion Meeting (ECM 2021), Naples, Italy, April 14–15, 2021. [poster]
P.1	<u>Trivedi, R.</u> and Karataş, A.E. , “Optical measurements of soot formation in coflow flames of fuel mixtures,” Ryerson URO Virtual Showcase, Toronto, Canada, September 14, 2020.

Research Group Posters, Workshop Displays, and Public Engagement

No.	Citation
E.2	Karataş, A.E., “Towards clean and safe gas turbine engines,” Energy Sustainability Research & Innovation Workshop, Faculty of Engineering and Architectural Science, Toronto Metropolitan University, Toronto, Canada, February 18, 2026. [research poster]
E.1	Karataş, A.E., “Propulsion and clean energy research group,” DAIR 2 Innovate Conference, AERIAS, Toronto, Canada, 2024. [research group poster]

Technical Reports

Trainee names are underlined; the name of A.E. Karataş is shown in bold.

No.	Report
R.1	<u>Hui, C.</u> , <u>McQueen, M.</u> , Şekercioğlu, F., and Karataş, A.E. , “Toronto Ambient Air Quality Impacts from COVID-19 Study,” Submitted to the City of Toronto, March 21, 2022. [report]

Invited Seminars and Keynote Lectures

No.	Invited Seminar / Keynote
S.7	Karataş, A.E., “Soot Formation at Elevated Pressures: Key Effects, Challenges, and Opportunities,” Middle East Technical University, Turkey, April 30, 2026. [presentation]
S.6	Karataş, A.E., “Soot Formation at Elevated Pressures: Key Effects, Challenges, and Opportunities,” Universidad Técnica Federico Santa María, Valparaíso, Chile, January 15, 2026. [presentation]
S.5	Karataş, A.E., Keynote Speaker, “Flying Clean: The Past and Future of Sustainable Propulsion,” Innovation Nation 2025, Canadian Society for Industrial Innovation (CSII), Hamilton, Canada, October 26, 2025. [presentation]
S.4	Karataş, A.E., “Bridging Combustion and Aerosol Science through Soot Maturity Analysis,” Middle East Technical University, Ankara, Turkey, June 12, 2025. [presentation]
S.3	Karataş, A.E., “Is Accurate Soot Measurement Feasible? E(m) and Maturity Analysis in Ethylene Flame Under Elevated Pressures,” Istituto di Ricerche sulla Combustione, National Research Council of Italy, Naples, Italy, July 11, 2024. [presentation]
S.2	Karataş, A.E., “Application of engine diagnostics to characterize respiratory ejectas: An experimental framework,”

No.	Invited Seminar / Keynote
	Institute for Biomedical Engineering, Science and Technology (iBEST), Toronto, Canada, September 11, 2020. [presentation]
S.1	Karataş, A.E., “Towards clean and safe gas turbine engines: Mitigating emissions and flame extinction,” Middle East Technical University, Ankara, Turkey, June 11, 2019. [presentation]

Media Features

No.	Feature
M.3	“CivicLabTO Discussion Series: Climate Change and Green Recovery,” featured as part of the City of Toronto’s CivicLabTO initiative, hosted by Humber College, 2021.
M.2	Ryerson Researchers Study Toronto Ambient Air Quality in CivicLabTO Collaboration, Featured by City Building Toronto, October 07, 2021. [feature]
M.1	Engineering COVID-19 Fashion with researchers from FCAD and FEAS, Featured by “Operation Breakthrough: Innovations from FEAS,” Ryerson Office of Social Innovation, April 06, 2020. [video]

7. Research Funding

Funding Summary

Category	Amount
Externally funded projects	\$820,488
Internal awards held/secured	\$383,394
Total funding	\$1,203,882

External Research Support

Program	Project Title and Role	Value (% my portion)	Dates
Alliance International Catalyst Quantum	Scalable Flame-Derived Quantum Dots for Next-Generation Photonic and Quantum Technologies (PI)	\$25,000 (100%)	2026/03–2027/03
TUBITAK-BILGEM Advanced Technologies Research Institute	Investigation of the Effects of Soot and Metal Particles in Exhaust on Infrared Radiation (co-PI, PI is M. Karaca)	\$70,000 (USD50,000, 0%)	2025/03–2026/03
EduCanada Faculty Mobility for Partnership Building Program	Canada-Chile Partnership on Reducing Air Pollution from Energy Systems (PI)	\$7,000 (100%)	2025/03–2026/03
NSERC Alliance International Catalyst	Deciphering Soot Maturity: A Collaborative Optical and Raman Diagnostics (PI)	\$25,000 (100%)	2024/01–2025/01
CFI John R. Evans Leaders Fund (JELF)	Emissions' Characterization of Alternative Fuels at High Pressures (PI)	\$197,488 (100%)	2023/03–2025/03
NSERC Alliance International Catalyst	Mitigating Climate Change by Reducing Particulate Matter Pollution from Aircraft (PI)	\$25,000 (100%)	2022/08–2023/08
MITACS Accelerate with the City of Toronto	Toronto Ambient Air Quality Impacts from COVID-19 (Co-PI, PI is M. Adams at U. Toronto)	\$30,000 (33%)	2021/01–2021/12
NRC Contract	Assessment of Performance of an On-Ground-Research Hybrid-Electric Aircraft Propulsion System (PI)	\$67,800 (100%)	2020/09–2022/09
NSERC Alliance	Engineering COVID-19 Fashion - Designing the Most Effective Face Masks for the Canadian Fashion Industry (PI)	\$50,000 (+12,000 in-kind) (56%)	2020/06–2021/06
NSERC Alliance	Assessment of COVID-19 Droplets in a Clinical Setting to Reduce the Risk to Health Care Providers (PI)	\$50,000 (+19,200 in-kind) (100%)	2020/06–2021/06
NSERC Discovery Launch Supplement	Understanding Combustion-Generated Soot and its Morphology (PI)	\$12,500 (100%)	2020/06–2025/05

Program	Project Title and Role	Value (% , my portion)	Dates
NSERC Discovery	Understanding Combustion-Generated Soot and its Morphology (PI)	\$224,000 (100%)	2020/04–2027/03
NSERC USRA for student Mohamed Azouz	Airborne Pollutant Concentration and Temperature Measurements Flames of Biofuels (PI)	\$5,500 (100%)	2020/05–2020/08

Internal Research Support

Program	Project Title and Role	Value (%)	Dates
TMU 2025 Internal Equipment Grant	Controlling Dancing Flames: High-Speed Camera for Studying Flame Instability (PI)	\$20,000 (100%)	2025/07–2026/07
FEAS DRF Booster	Exploring Pressure Effects on Soot Maturity: Bridging Combustion and Aerosol Science (PI)	\$10,000 (100%)	2025/05–2026/05
FEAS URE for student Junfeng Zhang	Design and Testing of a 3D-Printed Recirculation Mechanism (PI)	\$11,726 (100%)	2025/05–2025/08
FEAS Travel Competition	For travel to 40th International Symposium on Combustion (PI)	\$1,000 (100%)	2024/05/01
FEAS URE for student Amelia Magnat	Design, Construction, and Calibration of a Custom Czerny-Turner Spectrometer to Reduce Air Pollutants (PI)	\$7,758 (100%)	2024/05–2024/08
FEAS Travel Competition	For travel to 39th International Symposium on Combustion (PI)	\$1,000 (100%)	2022/06/01
FEAS and Mechanical Engineering SRC Fund	A Phase Doppler Particle Analyzer System (co-PI, PI is J. Friedman)	\$60,000 (0%)	Awarded 2021/03/08
FEAS Travel Competition	For travel to the 10th European Combustion Meeting (PI)	\$1,000 (100%)	Awarded 2021/01/27
Faculty of Science SRC Response Fund	Assessment of COVID-19 Aerosols and Droplets in Reducing the Risk to Health Care Providers (Co-PI, PI is M. Kolios)	\$50,000 (0%)	2020/06–2021/06
FEAS Travel Competition	For travel to the 38th International Symposium on Combustion (PI)	\$1,000 (100%)	Awarded 2020/04/28
FEAS URO for student Rushank Trivedi	Morphology Analysis of Airborne Pollutant from Biofuel Flames (PI)	\$10,266 (100%)	2020/05–2020/08
FEAS URE for student Mohamed Azouz	Airborne Pollutant Concentration and Temperature Measurements Flames of Biofuels (PI)	\$5,519 (100%)	2020/05–2020/08
Work Study Research Assistant Program	Airborne Pollutant Measurements in Bio-Diesel Flames (PI)	\$4,125 (100%)	2019/09–2020/05
Faculty of Engineering and Applied Science	Start-Up Grant (PI)	\$200,000 (100%)	2019/08–2024/09

8. Student Supervision and HQP Training

Supervision Summary

Category	Record
Ph.D. students supervised	0 completed, 4 in progress
M.A.Sc. students supervised	4 completed, 1 in progress
M.Eng. students supervised	5 completed, 0 in progress
Research assistants supervised	2 completed, 0 in progress
Undergraduate students supervised	10 completed, 3 in progress
Graduate theses examined	12 Masters, 9 Ph.D.

Ph.D. Students

Name	Project Title (Awards)	Dates
Awon Sharjeel	Carbonaceous Material from Flames (Ontario Graduate Scholarship, \$15,000)	2024/09–2026 (withdrawn)
Aryan Nobakht	Soot Formation at High Pressure (Ontario Graduate Scholarship, \$15,000)	2024/09–2028/09
Oytun Öner	Effects of Pressure on Soot Formation Processes, Co-supervised by S. Dworkin (Toronto Met Graduate Scholarship \$15,000)	2023/09–2027/09
Daniel Cormier	Development of a 2D Laser Induced Incandescence, Co-supervised by Ö. Gülder	2022/09–2026/09
Yash Rajan	Fuel Preheating Effects on Soot Formation, Co-supervised by Ö. Gülder	2021/09–2026/09

M.A.Sc. Students

Name	Project Title (Awards)	Dates
Talia de Ryck	Effects of Recirculation on Soot Formation (Ontario Graduate Scholarship, \$15,000)	2023/09–2025/09
Aryan Nobakht	Impact of pressure on soot properties in co-flow laminar flames of fuel mixtures exhibiting synergistic and reversal effects	2022/09–2024/09
Awon Sharjeel	Numerical cough dynamics and cough generator assessment with facemasks: A framework	2021/09–2023/12
Marek Serwin	Effects of Additives, Fuel Mixing, and Mechanically Induced Oscillations on Soot Formation	2020/09–2022/09
Madeline McQueen	Feasibility of Electrified Light Sport Aircraft Powertrains: Present Day and Future, (Ryerson Graduate Scholarship \$15,000, Winner of 2021 20 Twenties by Aviation Weekly)	2020/09–2022/08
Kai Lordly	Characterization of Respiratory Flows	2020/09–2022/08 (withdrawn)

M.Eng. Students

Name	Project Title	Dates
Danejra McKenzie	Hybrid-Electric Propulsion	2025/09–2026/05
Kajeev Gnanasegaram	Feasibility of Electrified Regional Aircraft Powertrains	2025/09–2026/05
Pascal Leung	Design of New Co-flow Burner	2019/09–2020/05
Paul Ravi Teja Chinnam	Design and Construction of a Thermophoretic Sampling System to Collect Soot from Flames	2019/09–2020/01
Ashwinraj Gnanavel	Design and Development of a Multi-colour Soot Emission Diagnostics to Measure Soot Temperature and Concentration	2019/09–2020/01

Research Assistants

Name	Project Title (Awards)	Dates
Christian Hui	Toronto Ambient Air Quality Impacts from COVID-19, (2020 Vanier \$150,000 for 3 years)	2021/01–2022/05
Aaron Chiu	Soot Reversal due to Partial Premixing (M.A.Sc. Student, University of Windsor)	2023/09–2023/12

Undergraduate Research Students

Name	Project Title (Awards)	Dates
Junfeng Zhang	Design and Testing of a 3D-Printed Recirculation Mechanism (FEAS URE \$11,725.70)	2025/05–2025/08
Hannah Goldberg	Design of a Metal Combustor	2025/03–2025/09
Eve Thamir	Hybrid-Electric Propulsion	2025/02–2025/09
Amelia Magnat	Spectroscopy of High-Pressure Flames (FEAS URE \$7,758)	2024/05–2024/08
Jayden Vellozo	Spectroscopy of Hydrogen Flames	2023/11–2024/05
Brent Ozdemir	Spectrometer Design for Combustion	2023/11–2024/05
Shankavie Gnaneswaran	Design and Construction of a Spectrometer	2022/11–2023/11
Mattias Cheung	Design and Construction of a Motorized Linear Slide	2022/11–2023/06
Rushank Trivedi	Spectral Soot Emission Data Analysis (FEAS URO \$10,266)	2020/06–2020/09
Mohamed Azouz	Soot Measurements in Atmospheric Laminar Diffusion Flames of Gaseous Biofuels (NSERC USRA \$5,500 and FEAS URE \$5,500)	2019/09–2020/08

Supervisory Committee Membership

Student, Degree, and Institution	Supervisor (Department)	Dates
Omar Nusrat, Ph.D., TMU	Michael Kolios (Physics)	2021/09–2025/06
Andisheh Khanehzar, Ph.D., TMU	Seth Dworkin (Mechanical)	2020/09–2024/06
Francisco Cepeda, Ph.D., TMU	Seth Dworkin (Mechanical)	2019/09–2023/06

Theses Examined

Student, Degree, and Institution	Project Title	Dates
Mijail Littin, Ph.D., Normandy University (examiner)	Characterization of Soot Properties in Laminar Diffusion Flames by Coupling Optical Techniques: Application to Sustainable Aeronautic Fuels	2025/12/11
Homa Zarei, Ph.D., TMU (candidacy exam chair)	Nano-Engineered Hydrogel Electrolyte Membranes for Hydrogen Production Through Water Electrolysis	2025/12/03
Shashank Singoji, M.A.Sc., TMU (committee chair)	Air-to-Air Object Detection and Tracking	2025/08/28
Mahsa Moayedi, Ph.D., TMU (committee chair)	Enzyme-Functionalized Reduced Graphene Oxide Sponges for Environmental Remediation	2025/07/28
Robert Barnsley, M.A.Sc., TMU (committee chair)	The Conceptualization, Design, and Development of a Variable Incidence Swept Wing for Vertical Flight	2025/04/22
Minsu Joo, M.A.Sc., TMU (committee chair)	Lift Measurement of a Wing Section Using Wall and Surface Pressures	2024/10/28
Zachary Clutchey, M.Eng., TMU (examiner)	Aeroelastic Divergence Analysis of a Six-Degree-of-Freedom Variable Geometry Morphing Truss Wing using Steady Vortex Lattice Method and Finite Element Analysis	2024/09/09
Andisheh Khanehzar, Ph.D., TMU (examiner)	Detailed Prediction of Soot Particle Properties; Advances in Machine Learning Applications	2024/09/06
Nahid Azizi, Ph.D., TMU (committee chair)	Polydopamine-Based Micro/Nano Hybrid Structures towards the Healthcare-Environment Nexus	2024/08/23
Mohamed Azouz, M.A.Sc., TMU (examiner)	Simulation and Experiment Study of Aircraft Cabin Air Flow with Particles	2024/05/03
Majid Pourmesgari, M.Eng., TMU (committee chair)	An Investigation into the New Product Development Process in the Aerospace Industry	2024/01/25

Student, Degree, and Institution	Project Title	Dates
Omar Nusrat, Ph.D., TMU (candidacy examiner)	Investigating the Characterization of Airborne Droplets with Photoacoustic Sensing	2023/08/30 and 2024/01/14
Francisco Cepeda, Ph.D., TMU (committee chair)	Computational Studies of Soot Production for Varying Fuels, Pressures, And Flow Conditions	2023/04/13 and 2023/06/12
Konstantin Federov, Ph.D., TMU (candidacy exam chair)	3D Printed Patterns for Lost Foam and Investment Casting of Aluminum Alloys	2022/09/06 and 2022/09/20
Ali Aboubih, M.Eng., Ryerson (committee chair)	Deep Reinforcement Learning Controller Design for Unmanned Aerial Vehicles”	2022/05/10
Himanshu Sharma, M.A.Sc., Ryerson (committee chair)	Modelling and Control of Hydraulic and Electrical Actuation Systems for Decentralized Control Systems	2022/01/10
Ruta Antonella, M.Eng., Ryerson (examiner)	A Preliminary Investigation of a Hydrogen Injection Wedge Strut for a Scramjet Combustor Application	2021/09/09
Aakash Gohil, M.Eng., Ryerson (committee chair)	An Investigation of Enhanced Lubrication Frequency and Wear Monitoring on Acme Screws	2021/05/11
Ilija Jovanovic, Ph.D., Ryerson (examiner)	Celestial Rover Localization	2020/11/06
Ali Foroozanfar, M.A.Sc., Ryerson (committee chair)	An Investigation into Fundamental Frequency of Intact and Defective 3D-printed PLA Beams	2020/08/31
Joel McQuaid, M.A.Sc., Ryerson (examiner)	Aerodynamic Analysis and Early On-Set Prediction of a Quadrotor in Vortex-Ring State	2019/11/28

9. Teaching

Teaching Summary

Category	Count
Courses taught at undergraduate level	36
Courses taught at graduate level	9

Courses Taught

Institution	Course	Terms
Toronto Metropolitan University	Aircraft Turbine Engines, AE8108	F2019, W2021–2025
Toronto Metropolitan University	Aerospace Propulsion, AER710	W2020–2025
Toronto Metropolitan University	Basic Thermodynamics, AER309	F2020–2025
Toronto Metropolitan University	Directed Studies, AE8135	F2023, W2023
University of Toronto	Aerospace Propulsion, AER510H	W2019
Seneca College	Advanced Aircraft Design, ADV800	F2017
Seneca College	Fundamentals of Aerodynamics, ARO400	W2018
Seneca College	Thermodynamics, THE300	W2015–2019
Seneca College	Flight Propulsion, FLP500	S2017–2018 and F2015–2018
Seneca College	Aircraft Stability and Control, ASC600	S2016–2017
Seneca College	Electricity Fundamentals, ELE100	F2015–2018
Seneca College	Fundamentals of Electronics, ELE200	W2015–2019

10. External Service and Professional Activities

Academic Leadership

- Visiting Faculty Hosted (2025/06–2025/10), Dr. Victor Chernov, Senior Lecturer, Department of Mechanical Engineering, Braude College of Engineering, Karmiel, Israel.

Conference Organization

- Co-organizer, Combustion Institute Canadian Section Spring Technical Meeting, Toronto, Canada, 2027, with S.B. Dworkin (Toronto Metropolitan University), S. Chaudhuri (University of Toronto), and C.P.T. Groth (University of Toronto).

Journal Editorial Board

- Member of Editorial Board, Frontiers in Mechanical Engineering, 2021/06–Present
- Associate Editor, Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, 2022/01–2025/03

Journal Reviewer

- Combustion and Flame (10 reviews)
- Proceedings of the Combustion Institute (6 reviews)
- Experimental Thermal and Fluid Science (2 reviews)
- Fuel (1 review)
- Carbon (1 review)
- Optics and Lasers in Engineering (1 review)
- Energy & Fuels (1 review)
- Combustion Science and Technology (1 review)
- Applications in Energy and Combustion Science (1 review)
- Scientific Reports (1 review)
- Indoor and Built Environment (1 review)
- Journal of the Energy Institute (1 review)
- Aerospace (1 review)
- SAE International (1 review)
- Applied Thermal Engineering (1 review)
- MCS2025 (1 review)
- Case Studies in Thermal Engineering (1 review)

Conference Session Chair

- Combustion Institute Canadian Section Spring Technical Meeting, Kingston, Canada, May 13–16, 2024 (Diagnostics II)
- 39th International Symposium on Combustion, Vancouver, Canada, July 24–29, 2022 (Soot, Nanomaterials & Large Molecules)
- Combustion Institute Canadian Section Spring Technical Meeting, Ottawa, Canada, May 16–19, 2022 (Flame Dynamics II)

Grant Proposal Reviewer

- McGill U. peer review panel for CFI (1 review)
- Mitacs Accelerate (3 reviews)
- Mitacs Accelerate Entrepreneur (1 review)
- NSERC Alliance (2 reviews)
- CFI JELF (1 review)

Membership in Professional Societies

- Professional Engineers of Ontario, 2024–Present
- Combustion Institute, 2008–Present
- Ontario Society of Professional Engineers (OSPE), 2023–2024
- Aviation Accreditation Board International, Visiting Team Member, 2017/02–2019/07

Other Service to the Profession and Community

- Tenure promotion reviewer for Carleton U. (1 review)

11. Internal Service and Professional Activities

University Level at Toronto Metropolitan University

- Review Committee Member, 2026 Internal Equipment Grant Competition, Office of the Vice-President, Research and Innovation, Toronto Metropolitan University, 2026/05–2026/06
- Served on the Undergraduate Research Opportunities (URO) Adjudication Committee, 2023/03

- Academic Integrity Council Member, 2022/02–2025/01

Faculty Level at Toronto Metropolitan University

- TMU Engineering Day Judge, 2025/04/25
- FEAS Strategic Research Plan Steering Committee, 2024/02–2025/01
- Faculty Awards Committee, 2024/10–2024/12
- TMU Engineering Day Judge, 2023/04/28
- Served on the FEAS Undergraduate Research Experience (DRF-URE) Adjudication Committee, 2023/03
- Ryerson Engineering Day Judge, 2022/04/29
- Ryerson Engineering Day Judge, 2021/04/30

Departmental Level at Toronto Metropolitan University

- Ad hoc Supervisory Committee Working Group, 2025/09–Present
- Departmental Hiring Committee Chair, 2024/06–2025/06
- Faculty Advisor to MetRocketry, 2024/02–Present
- Upcoming Program Peer Review Committee Member, 2023/04–2025/05
- Faculty Advisor to Metropolitan Aerospace & Combustion Hub, 2020/01–Present
- Scholarship and Awards Committee Member, 2019/10–Present
- Admissions and Studies Committee Member, 2019/10–Present
- Ad hoc committee member to assess CEN810, 2021/10
- Department Council Chair, 2020/03–2020/11
- Ontario Universities' Fair, 2019/09

Departmental Positions and Representation at Seneca College

- Academic Coordinator's Forum, 2017/01–2019/07
- Academic Integrity Committee (5 reviews), 2015/01–2019/07
- Ontario College Information Fair, 2018/10
- Open House, 2018/07
- Open House, 2017/11
- Degree Council, 2015/09–2017/01
- Open House, 2016/11
- Open House, 2016/05
- Funding & Capabilities, Ontario Aerospace Community, 2016/05
- Open House, 2015/11

Teaching Excellence Workgroups

- Student Work Quality Assurance Team, 2019/01–2019/07
- PEQAB Narratives and Continuous Improvement Group, 2018/05–2019/07
- Promotions Committee, 2015/01–2019/07

Curriculum Development

- Department of National Defence of Canada, Curriculum Assessment Team; travelled to Moose Jaw, SK to review DND curriculum, 2015/11–2015/12

Student Field Trips

- U. Toronto Institute for Aerospace Studies tour for military students, 2017/07
- Pratt & Whitney Canada Mississauga tour for military students, 2017/06
- Pratt & Whitney Canada Mississauga tour for civilian students, 2016/11
- Pratt & Whitney Canada Mississauga tour for civilian students, 2016/02

12. Professional Development

Workshops and Training

Date	Training
2026/01	Professional Practice Module 4, Professional Engineers Ontario (PEO), Toronto, ON
2025/01	Professional Practice Modules 1, 2, and 3, Professional Engineers Ontario (PEO), Toronto, ON
2021/01	Laser Safety Training, Ryerson University, Toronto, ON

Date	Training
2020/05	Tri-Council Policy Statement: TCPS 2: CORE, Toronto, ON
2020/05	Canada GCP Course: Researchers Involved with Human Research, Toronto, ON
2019/09	Consent Comes First Workshop, Ryerson University, Toronto, ON
2019/09	Bias in Peer Review Module, NSERC, Toronto, ON
2019/09	Introduction to Gender-based Analysis+, Women and Gender Equality Canada, Toronto, ON
2019/07	Access to Information and Protection of Privacy, Ryerson University, Toronto, ON
2019/07	Environmental Health and Safety Awareness Training, Ryerson University, Toronto, ON
2019/07	Workplace Violence Prevention & Response Training, Ryerson University, Toronto, ON
2019/02	Visiting Team Training Workshop: Recurrent, AABI Winter Meeting, Auburn, AL
2019/02	Diversity Workshop, AABI Winter Meeting, Auburn, AL
2017/05	Occupational Health and Safety Training, Seneca College, Toronto, ON
2017/02	Visiting Team Training Workshop, AABI Winter Meeting, Melbourne, FL
2017/02	Effective Leadership, University Aviation Association Annual Conference, Omaha, NE
2017/02	Flipping the Aviation Classroom, University Aviation Association Annual Conference, Omaha, NE
2016/04	Funding & Capabilities, Ontario Aerospace Community, Toronto, ON
2016/01	Workplace Hazardous Materials Information System Training, Seneca College, Toronto, ON
2015/03	Accessibility for Ontarians with Disabilities Act (AODA) Training, Seneca College, Toronto, ON
2010/11	Laser Safety Training, University of Toronto, Toronto, ON
2010/10	Ethics in Research Seminar, University of Toronto, Toronto, ON

Credit Courses

Year	Course
2023	Preparatory Course for the National Professional Practice Exam (6 weeks), OSPE, Virtual
2016	Foundations of Teaching and Learning (14 weeks), Seneca College, Toronto, ON
2015	Inclusive Teaching and Scholarly Practice (14 weeks), Seneca College, Toronto, ON