

## **M Reza Kholghy, Ph.D.**

Canada Research Chair (Tier II) in Particle Technology & Combustion Engineering  
Director of the Energy and Particle Technology Laboratory,  
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Canadian Citizen, expecting to receive PEng license on DEcember 2022

### **I. Education**

- 2019 Post-doctoral training, ETH Zurich, Switzerland, w/ [Sotiris Pratsinis](#)  
2016 Ph.D., University of Toronto, Canada, w/ [Murray Thomson](#)  
Thesis readers: [Guillaume Blanquart](#) (Caltech), [Charles A. Ward](#) (U Toronto), [James S. Wallace](#) (U Toronto), [Ömer L. Gülder](#) (U Toronto)  
2012 M.Sc., University of Toronto, Canada, w/ [Murray Thomson](#)  
Thesis readers: [James S. Wallace](#) (U Toronto), [Seth B. Dworkin](#) (Ryerson U)  
2010 B.Sc., Sharif University of Technology, Iran.

### **II. Employment**

- 2019 - now Assistant Professor, Carleton University, Canada.  
2017 - 2019 Research Associate and Lecturer, ETH Zürich, Switzerland.  
2016 - 2017 Course Instructor, University of Toronto, Canada.  
2010 - 2016 Research & Teaching Assistant, University of Toronto, Canada.

### **III. Awards, Scholarships & Fellowships**

- 2019 Canada Research Chair in Particle Technology & Combustion Engineering.  
2017 Natural Research Council of Canada postdoctoral fellowship.  
2013 Natural Research Council of Canada Vanier PhD scholarship.  
2016 Natural Research Council of Canada Michael Smith supplement award.  
2016 BioFuelNet Canada exchange award.  
2012 Pierre Rivard Hydrogenics graduate fellowship.  
2014 Neil Duncan Thompson graduate fellowship.  
2012 Best oral presentation award, 3<sup>rd</sup> MIE symposium, Toronto.

### **IV. [Publications](#)**, 22 published, 2 in preparation, citations: 1131, H-index: 16, H10-index: 17 Trainee's names underlined.

- i. **Kholghy, M. R.**, "Soot optical band gap and its absorption function", in preparation for *Carbon*, (2022).  
221. Naseri, A, **Kholghy, M. R.**, Juan, N, and Thomson, M. J., "Simulating yield and morphology of carbonaceous nanoparticles during fuel pyrolysis in laminar flow reactors enabled by reactive inception and aromatic adsorption", *Combustion and Flame*, 237, 111721, (2022).

21. Juan, N, Naseri, A, Kholghy, M. R., and Thomson, M. J., "NanoParticle Flow Reactor (NanoPFR): a tested model for simulating carbon nanoparticle formation in flow reactors", *International Journal of Chemical Reactor Engineering*, (2022).
20. Kelesidis, G.A., **Kholghy, M. R.**, "A Monodisperse Population Balance Model for Nanoparticle Agglomeration in the Transition Regime", *Materials*, 14, 3882, (2021).
19. **Kholghy, M. R.**, DeRosa, V., "Morphology, Composition and Optical Properties of Jet engine-like soot made by Flame Spray Pyrolysis", accepted in *Combustion and Flame*, 231, 111480, (2021).
18. **Kholghy, M. R.**, and Schumann, A., "Process Design for Gas Phase Synthesis of Nickel Nanoparticles", *Energy and Fuels*, 35, 5383 (2021).
17. **Kholghy, M. R.**, Kelesidis, G.A., "Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames", *Combustion and Flame*, 227, 456, (2021).
16. Kelesidis, G.A., **Kholghy, M.R.**, Zuercher, J., Robertz, J, Allemann, M., Duric, A., and Pratsinis, S.E., "Light scattering from nanoparticle agglomerates", *Powder Technology*, 365, 52, (2020).
15. **Kholghy, M.R.**, Eaves, N.A., Veshkini, A., and Thomson, M.J., "The role of reactive PAH dimerization in reducing soot nucleation reversibility", *Proceedings of the Combustion Institute*, 37, 1003, (2019).
14. Saggese, C., Singh, A.V., Xue, X., Chu. C., **Kholghy, M.R.**, Zhang, T., Thomson, M.J., Sung, C., Wang, H., "Effect of distillate fraction of real Jet fuel on sooting propensity", *Fuel*, 235, 350, (2019).
13. Zhang, T., Zhao, L., **Kholghy, M.R.**, and Thomson, M. J., "Detailed simulation of soot formation for Jet fuel with Hybrid Chemistry (HyChem) and comprehensive chemistry kinetic models", *Proceedings of the Combustion Institute*, 37, 2037, (2019).
12. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., "Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation", *Physical Chemistry Chemical Physics*, 20, 10926, (2018).
11. **Kholghy, M.R.**, Weingarten, J., Sediako, A., Barba, J., Lapuerta, M., Thomson, M.J., "Structural effects of biodiesel on soot formation in a laminar coflow diffusion flame", *Proceedings of the Combustion Institute*, 36, 1321 (2017).
10. **Kholghy, M.R.**, Afarin, Y., Barba, J., Lapuerta, M., Sediako, A., Thomson, M.J., "Comparison of multiple diagnostic techniques to study soot formation and morphology in a diffusion flame", *Combustion and Flame*, 176, 567 (2017).
9. Lapuerta, M., Barba, J., Sediako, A., **Kholghy, M.R.**, Thomson, M.J., "Morphological analysis of soot agglomerates from biodiesel surrogates in a coflow burner", *Journal of Aerosol Science*, 11, 65 (2017).

8. Sediako, A., Soong, C., Howe, J., **Kholghy, M.R.**, Thomson, M.J., "In situ observation of soot oxidation with an environmental transmission electron microscope", *Proceedings of the Combustion Institute*, 36, 841 (2017). (*distinguished paper*)
7. **Kholghy, M.R.**, Veshkini, A., Thomson, M.J., "The core-shell internal nanostructure of soot, a criterion to model soot maturity", *Carbon*, 100, 508 (2016).
6. **Kholghy, M.R.**, Weingarten, J., Thomson, M.J., "A study of the effects of the ester moiety on soot formation in a laminar coflow diffusion flame of a surrogate for B100 biodiesel", *Proceedings of the Combustion Institute*, 35, 905 (2015).
5. Cain, J., Laskin, A., **Kholghy, M.R.**, Thomson, M.J., Wang, H., "Molecular characterization of organic content of soot along the centerline of the coflow diffusion flame", *Physical Chemistry Chemical Physics*, 16, 25862 (2014).
4. Saffaripour, M., Veshkini, A., **Kholghy, M.R.**, Thomson, M.J., "Experimental investigation and detailed modeling of soot aggregate formation and size distribution in laminar coflow diffusion flames of jet A-1, a synthetic kerosene, and n-decane", *Combustion and Flame*, 161, 848 (2014).
3. **Kholghy, M.R.**, Saffaripour, M., Yip, C., Thomson, M.J., "The evolution of soot morphology on the centerline of a laminar coflow diffusion flame of a surrogate for Jet A-1", *Combustion and Flame*, 160, 2119 (2013).
2. Saffaripour, M., **Kholghy, M.R.**, Dworkin, S.B., Thomson, M.J., "A numerical and experimental study of soot formation in a laminar coflow diffusion flame of a Jet A-1 surrogate", *Proceedings of the Combustion Institute*, 34, 1057, (2013).
1. Saffaripour, M., Zabeti, P., **Kholghy, M.R.**, Thomson, M.J., "An experimental comparison of the sooting behavior of synthetic Jet fuels", *Energy and Fuels*, 25, 5584, (2011).

## V. Conference Presentations

### Oral Presentations

24. Rahbar, H, Goudeli, E., **Kholghy, M. R.**, "Sintering Rate of Nickel Nanoparticle by Molecular Dynamics", 5<sup>th</sup> International Symposium on Gas-phase Synthesis of Functional Nanomaterials: Fundamental Understanding, Modeling and Simulation, Scale-up and Application, Duisburg, (2022).
23. Riad, K, Peters, J., Woods, P. M., **Kholghy, M. R.**, "Flame Made Quantum Dots", 5<sup>th</sup> International Symposium on Gas-phase Synthesis of Functional Nanomaterials: Fundamental Understanding, Modeling and Simulation, Scale-up and Application, Duisburg, (2022).
22. Rahbar, H, Goudeli, E., **Kholghy, M. R.**, "Sintering Rate of Nickel Nanoparticle by Molecular Dynamics", World Congress on Particle Technology, Madrid, (2022).

21. Morán, J., Henry, C., Yon, J., **Kholghy, M. R.**, “Approximating the van der Waals interaction potentials between agglomerates and their collision enhancement effect”, World Congress on Particle Technology, Madrid, (2022).
20. Saceleanu, F., Wen, J., **Kholghy, M. R.**, “Mechanism of self-sustained aluminum-water batch reactions”, CI/CS Spring Technical Meeting, Ottawa, (2022).
19. Scott, J., Lobo, P., Smallwood, G., **Kholghy, M. R.**, “Flame spray pyrolysis to assess sustainable aviation fuel emissions”, CI/CS Spring Technical Meeting, Ottawa, (2022).
18. Rahbar, H., Goudeli, E., **Kholghy, M. R.**, “Sintering Rate of Nickel Nanoparticle by Molecular Dynamics”, CI/CS Spring Technical Meeting, Ottawa, (2022).
17. Adib, M., **Kholghy, M. R.**, “Prediction of mass yield, morphology and composition of soot particles generated by pyrolysis of methane”, CI/CS Spring Technical Meeting, Ottawa, (2022).
16. **Kholghy, M. R.**, Kelesidis, G.A., “Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames”, 24<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles (virtual), Zurich, (2021).
15. **Kholghy, M. R.**, “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, Cambridge Particle Virtual Meeting, Cambridge, (2021).
14. **Kholghy, M. R.**, “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, 12<sup>th</sup> U.S. National Combustion Meeting, Virtual meeting, Texas, (2021).
13. **Kholghy, M. R.**, Kelesidis, G.A., “Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames”, 12<sup>th</sup> U.S. National Combustion Meeting, Virtual meeting, Texas, (2021).
12. **Kholghy, M. R.**, Kelesidis, G.A., “Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames”, 10<sup>th</sup> European Combustion Meeting, Virtual meeting, Napoli, (2021).
11. **Kholghy, M. R.**, “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, 10<sup>th</sup> European Combustion Meeting, Virtual meeting, Napoli, (2021).
10. **Kholghy, M. R.**, DeRosa, V., and Pratsinis, S.E., “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, 4<sup>th</sup> International Symposium Gas-Phase Synthesis of Functional Nanomaterials, Virtual Meeting, Duisburg, (2020).

9. **Kholghy, M. R.**, Kelesidis, G.A., Pratsinis, S. E., “Free Molecular Coagulation Dynamics of Agglomerates at High Concentrations by a Monodisperse Model”, *European Aerosol Conference*, Gottenburg, (2019).
8. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., “Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation”, *European Aerosol Conference*, Gottenburg, (2019).
7. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., “Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation”, 3<sup>rd</sup> International Symposium Gas-Phase Synthesis of Functional Nanomaterials, Duisburg, (2018).
6. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., “Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation”, ETH conference on Combustion generated nanoparticles, Zurich, (2018).
5. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., “Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation”, 37<sup>th</sup> International Symposium on Combustion, Dublin, (2018).
4. Zhang, T., Zhao, L., **Kholghy, M.R.**, and Thomson, M. J., “Detailed simulation of soot formation for Jet fuel with Hybrid Chemistry (HyChem) and comprehensive chemistry kinetic models”, 37<sup>th</sup> International Symposium on Combustion, Dublin, (2018).
3. **Kholghy, M.R.**, Weingarten, J., Sediako, A., Barba, J., Lapuerta, M., Thomson, M.J., “Structural effects of biodiesel on soot formation in a laminar coflow diffusion flame, 36<sup>th</sup> International Symposium on Combustion, Seoul, (2016).
2. Sediako, A., Soong, C., Howe, J., **Kholghy, M.R.**, Thomson, M.J., “In situ observation of soot oxidation with an environmental transmission electron microscope”, 36<sup>th</sup> International Symposium on Combustion, Seoul, (2016).
1. **Kholghy, M.R.**, Weingarten, J., Thomson, M.J., “A study of the effects of the ester moiety on soot formation in a laminar coflow diffusion flame of a surrogate for B100 biodiesel”, 35<sup>th</sup> International Symposium on Combustion, San Francisco, (2014).

## Poster Presentations

21. Morán, J., Henry, C., Yon, J., **Kholghy, M. R.**, “Approximating the van der Waals interaction potentials between agglomerates”, International Aerosol Conference, Athens, (2022).
20. Adib, M., **Kholghy, M. R.**, “Prediction of mass yield, morphology and composition of soot particles generated by pyrolysis of hydrocarbons, 6<sup>th</sup> International Sooting Flame Workshop, Vancouver, (2022). (**Received 3-minute competition award**)

19. Rahbar, H., Goudeli, E., **Kholghy, M. R.**, “Sintering Rate of Nickel Nanoparticle by Molecular Dynamics”, Waterloo Nanotechnology Conference (virtual), Waterloo, (2022). **(Received best poster award)**
19. Scott, J., **Kholghy, M. R.**, “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, 24<sup>th</sup> ETH Conference on Combustion Generated Nanoparticles (virtual), Zurich, (2021). **(Received best poster award)**
18. Scott, J., **Kholghy, M. R.**, “Morphology, Composition and Optical Properties of Jet Engine Like Soot Made by Flame Spray Pyrolysis”, European Aerosol Conference (virtual), Birmingham, (2021). **(Received best poster award)**
17. Adib, Mo., Kelesidis, G.A., **Kholghy, M. R.**, “Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames”, European Aerosol Conference (virtual), Birmingham, (2021). **(Received best poster award)**
16. Rahbar, H., Schumann, A., **Kholghy, M. R.**, “A Simple Model for GAs-Phase Synthesis of Nickel Nanoparticles”, European Aerosol Conference (virtual), Birmingham, (2021).
15. **Kholghy, M. R.**, Kelesidis, G.A., “Surface Growth, Coagulation and Oxidation of Soot by a Monodisperse Population Balance Model in Laminar Flames”, 5<sup>th</sup> International Sooting Flame Workshop (virtual), Adelaide, (2021).
14. **Kholghy, M. R.**, Schumann, A., and Pratsinis, S.E., “Process Design for Gas Phase Synthesis of Nickel Nanoparticles”, 4<sup>th</sup> International Symposium Gas-Phase Synthesis of Functional Nanomaterials, Virtual Meeting, Duisburg, (2020).
13. **Kholghy, M. R.**, Kelesidis, G.A., “Free Molecular Coagulation Dynamics of Agglomerates at High Concentrations by a Monodisperse Model”, *Gordon Research Conference on Laser Diagnostic in Energy and Combustion Science*, Switzerland, (2019).
12. **Kholghy, M.R.**, Kelesidis, G.A., Zuercher, J., Robertz, J, Allemann, M., Duric, A., and Pratsinis, S.E., “Light scattering from nanoparticle agglomerates”, *Gordon Research Conference on Laser Diagnostic in Energy and Combustion Science*, Switzerland, (2019).
11. Kelesidis, G.A., **Kholghy, M. R.**, Fan, L., and Pratsinis, S.E., Impact of Composition and Morphology on Soot Optical Properties”, *Gordon Research Conference on Laser Diagnostic in Energy and Combustion Science*, Switzerland, (2019).
10. **Kholghy, M. R.**, Floader, R. and Pratsinis, S.E., “Soot light absorption and its optical bad gap”, ETH conference on Combustion generated nanoparticles, (2019).
9. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., “Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation”, ETH conference on Combustion generated nanoparticles, (2019).
8. **Kholghy, M. R.**, Kelesidis, G.A., and Pratsinis, S.E., “Free Molecular Coagulation Dynamics of Agglomerates at High Concentrations by a Monodisperse Model”, *European Aerosol Conference*, Gottenburg, (2019).

7. Kelesidis, G.A., Brunn, A., **Kholghy, M. R.**, Fan, L., and Pratsinis, S.E., "Impact of Composition and Morphology on Soot Optical Properties", ETH conference on Combustion generated nanoparticles, (2019). (**Received best poster award**)
6. **Kholghy, M.R.**, Kelesidis, G.A. and Pratsinis, S.E., "Reactive polycyclic aromatic hydrocarbon dimerization drives soot nucleation", 3<sup>rd</sup> International Sooting Flame Workshop, Dublin, (2018).
5. **Kholghy, M.R.**, Veshkini, A., Thomson, M.J., "The core-shell internal nanostructure of soot, a criterion to model soot maturity", 2<sup>nd</sup> International Sooting Flame Workshop, San Francisco, (2014).
4. **Kholghy, M.R.**, Veshkini, A., Thomson, M.J., "The core-shell internal nanostructure of soot, a criterion to model soot maturity", 35<sup>th</sup> International Symposium on Combustion, San Francisco, (2014).
3. **Kholghy, M.R.**, Weingarten, J., Thomson, M.J., "Structural effects of biodiesel on soot formation in a laminar coflow diffusion flame, 35<sup>th</sup> International Symposium on Combustion, San Francisco, (2014).
2. **Kholghy, M.R.**, Saffaripour, M., Yip, C., Thomson, M.J., "The evolution of soot morphology on the centerline of a laminar coflow diffusion flame of a surrogate for Jet A-1", 34<sup>th</sup> International Symposium on Combustion, Warsaw, (2012).
1. **Kholghy, M.R.**, Saffaripour, M., Yip, C., Thomson, M.J., "The evolution of soot morphology on the centerline of a laminar coflow diffusion flame of a surrogate for Jet A-1", 1<sup>st</sup> International Sooting Flame Workshop, Warsaw, (2012).

**VI. Research Grants, 1'970'000 CAD in total as PI.**

#	Project Title, (PI or Co PI)	Agency, Program Source	Value (%)	Award Dates
15	<i>Novel aluminum-water reactor for sustainable cogeneration of green hydrogen, heat, and alumina</i>	National Research Council of Canada and German Aerospace Center (DLR), Canada – Germany 3+2 collaborative call for proposals on low-carbon hydrogen technologies  In collaboration with GH Power, ParteQ, Aachen University and the National Research Council of Canada	\$1,500,000 (\$25%)	2022-2025
14	<i>Flame Spray Pyrolysis burner as a laboratory surrogate to enable rapid development and low-cost screening of</i>	Transport Canada  In collaboration with the	\$120,000 (50%)	2022-2023

	<i>sustainable renewable fuels for aircraft and marine engines and assess their environmental impacts</i>	National Research Council of Canada		
13	<i>Multiscale Modeling of Nanoparticle Formation in Gas Phase</i>	Compute Canada Resource Allocations (RAC)	360 CPU/y 2 GPU/y Value: \$51,211 (100%)	2022-2023
12	<i>Novel aluminum-water reaction for co-generation of green hydrogen, heat and alumina</i>	OCI GH Power	\$225,000 (100%)	2022-2023
11	<i>Process Design for Co-generation of Carbon Black and Hydrogen from Methane Pyrolysis (PI)</i>	MITACS Monolith Materials (USA)	\$120,000 (100%)	2022-2025
10	<i>Aluminum-Water Reactors for Sustainable Generation of Hydrogen</i>	MITACS Frontenac Energy	\$18,750 (%100)	2021-2021
9	<i>Fund Developing Plausible Deep Decarbonization Pathways for the Canadian Energy System: Investigating the Role of Hydrogen (CoPI)</i>	Carleton Office of the Vice-President (Research and International) Multidisciplinary Research Catalyst	\$40,000 (0%)	2021-2022
8	<i>Nano sensors for challenges in climate change, food security and healthcare (PI)</i>	Carleton Office of the Vice-President (Research and International) Multidisciplinary Research Catalyst Fund	\$50,000 (100%)	2021-2023
7	<i>Estimating the Global Warming Impact of Black Carbon Emissions (PI)</i>	Carleton International Research Seed Grant	\$10,000 (100%)	2021-2023
6	<i>Multiscale Modeling of Nanoparticle Formation and Their Optical Properties (PI)</i>	Compute Canada Resource Allocations (RAC)	160 CPU/y Value: \$20,000 (100%)	2021-2022
5	<i>Aluminum-water reactions promoted by nano catalyst made with Flame Spray Pyrolysis (PI)</i>	NSERC Alliance/OCE VIP Frontenac Energy Cleanwave Energy	\$75'000 (100%)	2021-2022



4	<i>System for Flame Synthesis, Collection and Characterization of Functional Nanoparticles (PI)</i>	Canada Foundation for Innovation & Ontario Research Fund	\$185'000 (100%)	2020
3	<i>Flame Made Nanoparticles (PI)</i>	Canada Research Chair (Tier II)	\$600'000 (100%)  \$100K for research only	2019-2024
2	<i>Energy Storage by Plasma Methane Decarbonization for CO<sub>2</sub>-free Synthesis of H<sub>2</sub> and Carbonaceous Nanoparticles (PI)</i>	NSERC Discovery Grant & Early Career Supplemental Award & COVID supplement	\$162'000 \$12'500 \$4'320 (100%)	2019-2025
1	<i>Start-up Fund (PI) from Carleton University</i>	Faculty of Eng & Design MAE Department, Office of Vice Pres Res & Int Lab reno & equip install covered by MAAE & FED	\$30'000 \$30'000 \$50'000 \$131,000 (100%)	2019

## VII. Teaching

8. Directed Study on Mass Transfer, (PhD), W 2022, Carleton
7. Micro and Nanoparticle Engineering, (B.Sc.), F 2020, F 2021, F 2022, Carleton
6. Applied Thermodynamics, (B.Sc.), W 2020, W 2023, Carleton
5. Fluid Mechanics I, (B.Sc.), W, F 2020, W 2021, W 2022, Carleton
4. Micro and Nanoparticle Engineering, (B.Sc.), W 2019, ETH Zurich
3. Mass Transfer, (B.Sc.), Lecturer, F 2018, ETH Zurich
2. Fundamentals of Combustion (Ph.D. & M.Sc.), W 2017, University of Toronto
1. Fundamentals of Computer Programming (B.Sc.), W 2016, University of Toronto

## VIII. Supervision of Students & Post-Doctoral Fellows

PDF: 1 completed, 2 ongoing

Ph.D.: 3 ongoing, 1 completed (co supervised from U of T)

M.Sc: 3 completed, 1 ongoing, (2 in ETH Zurich)

B.Sc: 12

<b>Current Post-Doctoral Fellows</b>			
#	Name	Research Project	Start Date
2	Dr. Kerolos Riad	Scalable synthesis of graphene using flame spray pyrolysis for carbon-capture technologies and the catalysis of renewable fuels	2022.04
1	Dr. Florin Saceleanu	Aluminum Water Reaction for Renewable Hydrogen Generation	2021.03

<b>Current Graduate Students</b>			
#	Name	Research Project	Start Date
5	Thomas Kirton MAsc	Aluminum Water Reaction for Renewable Hydrogen Generation	2022.05
4	Mahsa Salehi PhD	Modeling Aluminum Water Reactions	2021.01
3	Hossein Rahbar PhD	Multiscale Process Design of Nickel Nanoparticle Synthesis <i>Best poster Award in Waterloo Nanotechnology Conference, 2022</i>	2021.01
2	Mo Adib PhD	Process Design for High Concentration Synthesis of Carbon Black and Hydrogen <i>Awarded Gabriel Warshaw Scholarship (\$1'745)</i> <i>Awarded Douglas Miller Scholarship (\$6'887)</i> <i>Best poster Award by a Junior Scientist, European Aerosol Conference, 2022, (100 EUR)</i>	2021.01
1	Jason Scott MAsc	Jet Engine like Soot Generated by Flame Spray Pyrolysis <i>Partially funded by NRC Canada (\$16'000 + ~\$40'000 in equipment)</i> <i>Mitacs Globalink Research Award (\$6'000)</i> <i>Queen Elizabeth II Graduate Scholarship in Science and Technology Award (\$15'000)</i> <i>Best Poster Award, ETH Combustion Generated Nanoparticles Conference, 2021, (600 CHF)</i> <i>Best poster Award by a Junior Scientist, European Aerosol Conference, 2022, (100 EUR)</i>	2020.09

<b>Former Post-Doctoral Fellows</b>				
#	Name	Project Title and Information	Dates	Initial position
1	Dr. José Morán	Estimating van der Waals forces between fractal-like agglomerates and their collision enhancement effect <i>Mitacs Globalink Research Award (\$6'000)</i>	2021.12 2022.04	Postdoctoral fellow in the University of Minnesota

<b>Former Graduate Students</b>				
#	Name	Project Title and Information	Dates	Initial position
4	Jason Scott MAsc	Jet Engine like Soot Generated by Flame Spray Pyrolysis <i>Partially funded by NRC Canada (\$16'000 + ~\$40'000 in equipment)</i>	2020.09 to 2022.09	Research Associate in the Black Carbon Metrology Group, National

		<p><i>Mitacs Globalink Research Award (\$6'000)</i></p> <p><i>Queen Elizabeth II Graduate Scholarship in Science and Technology Award (\$15'000)</i></p> <p><i>Best Poster Award, ETH Combustion Generated Nanoparticles Conference, 2021, (600 CHF)</i></p> <p><i>Best poster Award by a Junior Scientist, European Aerosol Conference, 2022, (100 EUR)</i></p>		Research Council of Canada
3	Ali Naseri  Main advisor: Murray Thomson <i>U of T</i>	<p>Formation of Carbonaceous Nanoparticles in Flow Reactors</p> <p><i>Awarded NSERC PGSD (\$21'000×3)</i></p>	2018-2021	Process Engineer in Ekona power, Postdoctoral Fellow in Cambridge
2	Valentina DeRosa (ETH Zurich)	Spray synthesis of carbon nanoparticles	2019	Roche Diagnostics Zurich
1	Armen Zendeli (ETH Zurich)	A monodisperse Population Balance Model Accounting for Particle Morphology and Polydispersity	2018	Siemens Home Technologies Zug

<b>Former Undergraduate Research Students</b>				
#	Name	Project Title and Information	Dates	Initial position
12	Adam Jone	<i>Awarded CCE fund (\$4'000)</i>	2022.05 2022.08	
11	Jeremy Eggasse	<i>Awarded MITACS Globalink Award (\$6'000)</i>	2022.05 2022.08	
10	Deepak Somani	<i>Awarded MITACS Globalink Award (\$6'000)</i>	2022.05 2022.08	
9	Jeremy Peters	<i>Awarded NSERC USRA (\$6'000) and CCE fund (\$4'000)</i>	2022.05 2022.08	
8	Max Campbell	<i>Awarded NSERC USRA (\$6'000) and CCE fund (\$4'000)</i>	2022.05 2022.08	
7	Ryan McPherson	<i>Awarded CCE fund (\$4'000) and I-CUREUS (\$2'500)</i>	2021.05 2022.04	

6	Jules Breau	<i>Awarded NSERC USRA (\$6'000) and CCE fund (\$4'000)</i>	2021.05	
5	Hend Mhemed	<i>Awarded NSERC USRA (\$6'000), CCE fund (\$4'000) and I-CUREUS (\$2'500)</i>	2020.05	
4	Ewald Kleefstra	An open-source code for simulating gas phase synthesis of nanoparticles with laminar flames	2019	IT developer in Gyselroth Zurich
3	Alexander Schumann	Process design for gas phase synthesis of Nickel nanoparticles	2019	Graduate Student in ETH Zurich
2	Raphael Floader	Developing an automated tool for measuring nanoparticle optical band gap	2019	Siemens Home Technologies Zug
1	Stephan Wendelspiess	Developing a two-dimensional moving sectional model to simulate nanoparticle synthesis during simultaneous nucleation, surface growth, sintering and coagulation		Graduate Student in ETH Zurich

## IX. Community service:

### Media Outreach

"[How is nanotechnology affecting your wine, gut and climate?](#)" Presented at 4TH SPACE at Concordia University. March 24<sup>th</sup>, 2021.

### Internal, Carleton

4. Developing Graduate Engineering Communications Course for the Faculty of Engineering and Design in Collaboration with School of Linguistics and Language Studies, 2021
3. Undergraduate Scholarship Committee, Department of Mechanical & Aerospace Engineering, 2020/2021, 2021/2022
2. Hiring committee for the Department of Mechanical & Aerospace Engineering, 2020/2021 & 2021/2022
1. Fluid, thermo and heat transfer strand Committee for the Department of Mechanical & Aerospace Engineering, 2019/2020, 2020/2021, 2021/2022

### International

4. Session chair for the 38<sup>th</sup> American Association of Aerosol Research annual conference, 2020, Online virtual meeting
3. Program leader for the International Sooting Flame Workshop, 2019-2022.
2. Session chair for the 37<sup>th</sup> international symposium on Combustion, August 2018, Dublin.
1. Jury members for MaP symposium, ETH Zurich, June 2018.

## Graduate Examinations

9. Andrei Bronipolskey, MSc Thesis, Aerodynamic Study of a Strut and a Row of Guide Vanes in Tandem Configuration, September 2022, Carleton
8. Damon Burt, MSc Thesis, Efficiency and Emission Rates of Flares in a Turbulent Crosswind, September 2022, Carleton
7. Cameron Roth, MSc Thesis, Gas- and Particulate-Phase Emissions from Lab-Scale Flares Experiencing Liquid Carryover, April 2022, Carleton
6. José Carlos Moran, PhD Thesis, Improving the numerical simulation of soot aerosol formation in flames, November 2021, CORIA, France
5. Devron Colley, MS.c. Thesis, Optical properties of substrate-supported mixtures of Ag and Au nanoparticles, September 2021, Carleton
4. Zachary R. Milani, MS.c. Thesis, Remote Detection of Sodium and Potassium Atomic Emission Signatures as an Indicator of Liquid Carry- Over into Flare Systems in North Dakota, Sothern Saskatchewan, and Ecuador, June 2021, Carleton
3. Fadi Araji, MS.c. Thesis, Effects of Porosity, Wall Thickness and Length on the Filtration Efficiency of Gasoline Particulate Filters, December 2020, Carleton
2. Chanon Pretorius, MS.c. Thesis, Aerodynamic and Structural Design of Flow Conditioning, Flow Seeding and Testing Sections of a High-Speed Wind-Tunnel, Carleton University, October 2020, Carleton
1. Parvin Mehr, MS.c. Thesis, Experimental Modelling of Black Carbon Emissions from Gas Flares in the Oil and Gas Sector, Carleton University, September 2020, Carleton

## Editorial Activates

1. *Guest editor* for special issue in *processes* on “Gas-Phase Manufacturing of Nanoparticles: Synthesis and Multiscale Modelling”,
2. *Reviewer for*

### 2.1. **Journals:**

Applications in Energy and Combustion Science (1)  
International Journal of Chemical Kinetics (1)  
International Journal of Hydrogen Energy (1)  
Proceedings of the Combustion Institute (27)  
Aerosol Science and Technology (2)  
Journal of Aerosol Science (2)  
Nature Communications, Chemistry (1)  
Combustion and Flame (15)  
Physical Chemistry C (1)  
Ceramic International (1)  
Powder Technology (1)  
HERM 2018 (2)  
Langmuir (1)  
Fuel (3)

- 2.2. **Proposals:**  
MITACS Accelerate (1)

**X. Membership:**

Combustion Institute  
The Aerosol Society  
The American Association for Aerosol Research

**XI. Equity, Diversity, and Inclusion (EDI):** I am committed to EDI for reasons of fairness but also because it is linked to creativity, productivity, and innovation. I am aware of some barriers that have hindered different groups from advancing in academia and try to eliminate those in my teaching and research environment. For example, Implicit bias and the “mirror-tocracy”, our tendency to recognize and reward individuals who remind us most of ourselves, can limit the diversity of those whom we recruit and promote. To mitigate such barriers, I do my best to learn about them and adopt appropriate teaching, coaching, and recruiting strategies to eliminate them in my day-to-day work. I also try to recruit a diverse range of students in my research group and encourage an inclusive working environment by promoting flexible working days/hours/locations, offering research assistant financial support that is on the higher end range of the Faculty of Engineering and Design in Carleton, and supporting individuals in my team for taking classes to enhance specific skills. Currently my group has members from five countries.