

DECEMBER 2022 

Early Career Scientist Newsletter

Issue 1, Volume 1



MESSAGE FROM STUDENT CHAPTER

Welcome to the first Canadian Association of Aerosol Research (CAAR-ACRA) early career scientist newsletter!

We are starting this newsletter so we can keep early career scientists in the Canadian Aerosol Science community updated and informed. This issue includes interviews, conference highlights, and a few interesting tidbits.

Special thanks to all the contributors and those in the CAAR-ACRA community, especially Dr. Tim Sipkens, who contributed to this newsletter and to Dr. Caroline Duchaine and Marie H  l  ne Pedneau for the French translation.

Yours Truly,
Amirashkan, Spiro and Rachel



Newsletter Highlights

Message from the
CAAR-ACRA student
chapter

Conference Highlights

Featured Scientist:
Dr. Tim Sipkens

Webinars, Seminars and
Podcasts

We want to hear from
you!



FEATURED SCIENTIST - DR. TIM SIPKENS

Q: What is your current research focus?

A: My research focuses on aerosol characterization and measurement across a range of applications, including aerosol pollutants, such as soot; engineered nanoparticle synthesis; and particle filtration, such as that by masks. My specialization is in data analysis, including:

- interpretation of tandem measurements, where two classification/measurement techniques are used in series;
- analysis of transmission electron microscopy (TEM) images;
- aerosol heat transfer modeling (nanoscale in space and time);
- optical diagnostics (laser-based measurement methods); and
- data inversion (inverse analysis techniques, Bayesian statistics).

Q: How does working for a government research group differ from academic research at a University?

A: Government priorities differ somewhat from those of academic institutions. We do not apply for grants from the tri-councils. Instead, we do more work with other government departments, writing proposals to address their priorities. This allows us to have good ties to policy-makers and regulators, which means that the outputs of our research can lead to direct impacts that affect Canadians. There are fewer direct opportunities for student supervision and teaching. Thus, we also spend a larger portion of our time directly engaged in research. However, we don't have the same mentorship opportunities that exist in the academic setting, which is an aspect of academia that I miss. While still possible, for example via adjunct professor appointments, you have to work a little bit harder for the opportunities.

FEATURED SCIENTIST - DR. TIM SIPKENS

Q: Can you tell us a few things about yourself?

What is your research background and why did you choose to work in this field?

A: I started with an interest in the synthesis of novel nanomaterials, as nanotechnology was an emerging field. This led to a research background in optical diagnostics for particles, specifically, time-resolved laser-induced incandescence (TiRe-LII), an optical diagnostic used for primary particle sizing and surface area measurements. I primarily worked on extending the technique from its combustion origins to engineered nanoparticles of various kinds. However, the broader climate implications of aerosols along with its characterization challenges pulled me into the broader aerosol science field. Throughout my postdoc, I worked on a variety of aerosol characterization projects, for example, applying machine learning to TEM image analysis. My strengths in data analysis more broadly enabled me to address problems across subfields, including bridging into pandemic research to address particle filtration efficiency.

Q: What is one tip that you would give to a new junior PhD student?

A: Completing a PhD can often feel overwhelming and full of setbacks. Don't lose heart, the challenges are part of growth; part of the process of learning how to teach. Be okay with failure, and get comfortable with the process of revising one's work. At the same time, celebrate your successes, both are part of this process.



Q: The new logo for CAAR-ACRA looks amazing, what was your inspiration behind making it?

A: Like many designs, the CAAR logo was a synthesis of ideas from different places. The maple leaf was an obvious choice: something to represent Canada. The red is another representation of Canada. Otherwise, I was inspired a bit by the logo of the Aerosol Society (from the UK), modern bubble plots, and the fact that aerosols are a collection of particles.

Q: What do you look forward to most with CAAR ACRA?

A: Having a Canadian community should allow for more cross-pollination in the aerosol field. The problem with some of the bigger aerosol conferences, for example, is that there are so many parallel sessions for the subfields of aerosol science. While some of this separation is warranted, having a smaller community allows for mixing across the subfields of aerosol science, while encouraging local collaboration. Who knows, there may be an aerosol scientist one city over who can help provide a solution to one of the problems in your own work.

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Conference Highlights

With the beginning of the semester a few conferences in the atmospheric/aerosol science happened around the world. The members of the trainee chapter of CAAR-ACRA were able to attend some of them and have reported back.

NEXT GENERATION AMBIENT AIR MONITORING CONFERENCE - LONDON, ONTARIO



This local conference took place in London Ontario on Sept 13-14th 2022. It was attended by a wide range of industry, regulators and academia.

Recipients of the Air & Waste Management Association (A&WMA) scholarship presented their research work at this conference. Congratulations to **Nasim Yavari, Priya Patel and Corbin Sparks** for this achievement and their presentations.



IAC 2022 - ATHENS, GREECE

The International Aerosol Conference (IAC) was one of the first international in-person conferences in the aerosol science community. In 2022, this quadrennial conference took place in Athens, Greece with almost 1000 participants online and in person.

It was a great opportunity for trainees to meet with their international counterparts and also with academic researchers. Mark your calendars for the next IAC conference in Xi'an, China in 2026!



CARWH 2022

The Canadian Association for Research Work & Health (CARWH) Conference was held online on Sep 15-16th 2022. Aerosol exposures and their health effects were a key component in the conference.



AAAR - RALEIGH, NORTH CAROLINA

The 40th annual conference of the American Association for Aerosol Research (AAAR) during October 3-7. At AAAR there were 3 special symposia designed to bridge multiple areas of the topic:

- Biomass combustion
- Aerosol physical chemistry and microphysics
- Aerosol science of infectious disease
- Aerosol sources and constituents of emerging importance

For access to recordings of the plenaries from the conference please see AAAR's Youtube channel link:

<https://bit.ly/youtubeAAAR>

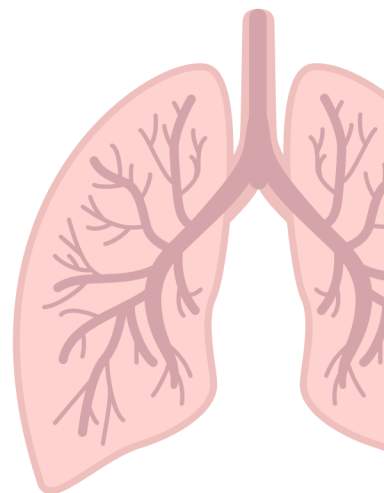
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WEBINARS, SEMINARS & PODCASTS

Please see below for some recommended enrichment that we have compiled.

health

- **Health Effects Institute (HEI)** - Science on the 7th a live interview series by the HEI on air quality, pollution, and global health. (link: <https://www.healtheffects.org/science-on-the-7th>)
- **Canadian Urban Environmental Health Research Consortium (CANUE)** - Webinars about pollution in urban environments, and understanding their subsequent health effects. (link: <https://canue.ca/webinars/>)
- **Occupational Cancer Research Centre Seminars** - Seminars from 2013-present on occupational exposure of aerosols, and their subsequent health effects. (link: <https://www.occupationalcancer.ca/2022/occupational-and-environmental-health-seminar-series-2022-2023/>)



atmosphere



- **American Association for Aerosol Research** - AAAR's Youtube channel has recordings from the 40th AAAR annual conference and a very informative weekly lecture series. (link: <https://bit.ly/youtubeAAAR>)
- **Frontiers in Atmospheric Chemistry Seminar Series** - weekly virtual seminars with a mix of junior and senior researchers from North America (link: <https://facss.mit.edu/>)
- **National Oceanic and Atmospheric Administration (NOAA) Science Seminar Series** - weekly 45 minute virtual seminars by researchers leading in atmospheric science (link: <https://www.star.nesdis.noaa.gov/star/NOAAScienceSeminars.php>)

indoor air

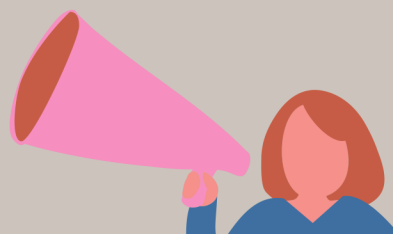
- **Indoor Air Quality (IAQ) Radio** - Weekly discussions on IAQ, built environment and disaster restoration issues with over 600 episodes! (link: <https://www.iaqradio.com/>)
- **Environment Protection Agency IAQ Science & Technology** - Webinar series hosted by EPA's Indoor Environment Division. (link: <https://www.epa.gov/indoor-air-quality-iaq/indoor-air-quality-science-and-technology#webinar>)
- **American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Journal Podcast** - Conversations with leading experts in the HVAC industry (link: <https://www.ashrae.org/news/ashraejournal/ashrae-journal-podcast>)



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Early Career Scientist Chapter Updates

We want to hear from you!



As CAAR-ACRA Early Career Scientist chapter is a new organization and just starting up, we would love to hear from you! You can contact us through our emails below .

The Early Career Scientist Chapter is currently recruiting new members. Please let us know if you are interested by emailing rachel.tyli@ontariohealth.ca.

Please fill out this Google Form for feedback on future events. It is only 4 short questions!
<https://forms.gle/RAoZNpNXgwhQwuUT8>

We are particularly interested in recruiting a fluent french speaking trainee to help out with newsletter translations and other outreach to the French-speaking community.

Early Career Scientist Chapter

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Amirashkan Askari (He/Him) is a PhD student of Chemical Engineering in Arthur Chan's Group. His research interests include a variety of topics related to the impact of indoor sources of organic emissions on ambient air quality. He enjoys watching movies, listening to audiobooks, and loves to read about history. (email: a.askari@mail.utoronto.ca)

Rachel Tyli (She/Her) is a PhD Student in Laboratory Medicine & Pathobiology studying under Dr. James Scott and under Dr. Tracy Kirkham at the Occupational Cancer Research Centre. Her research interests lie in respiratory protection for workers -specifically paramedics. In her spare time, she enjoys running around Toronto looking for free food events. (email: rachel.tyli@ontariohealth.ca)

