

# SEMINAR SERIES 2018 - 2019

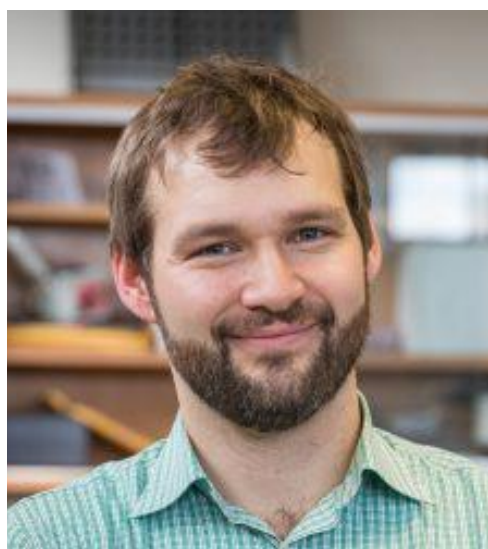
SOUTHERN ONTARIO CENTRE FOR ATMOSPHERIC AEROSOL RESEARCH  
UNIVERSITY OF TORONTO

## UNDERSTANDING COMPLEX MIXTURES OF HYDROCARBONS RELEASED INTO THE ENVIRONMENT

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VIRGINIA TECH

Complex mixtures of hydrocarbons are a major contaminant across a wide range of environments, from vehicle emissions of atmospheric particulate matter to spilled petroleum fuels. This seminar will discuss both issues, with a focus on the sub-surface discharge of oil used for heating residences. Around 6 million homes in the U.S. rely on home heating oil for heat, and the majority of oil storage tanks end up leaking or spilling. More than half a million documented instances of discharges of fuel oil from underground storage tanks throughout the U.S. have potentially exposed home owners to hazardous fuel vapors. These vapors are comprised of thousands of different hydrocarbons, making it difficult to understand their environmental fate and the risks they pose. We sampled sub-surface air at ~50 Virginia residences at which a reported fuel oil discharge had been previously remediated, with the goals of understanding the biogeochemical transformations of spilled oil and assessing potential risk to residents. By adapting common analytical tools, we were able to characterize these complex hydrocarbon mixtures with unprecedented detail, categorizing their constituent hydrocarbons based on their molecular structures. Our results provide new insights into traditional approaches for evaluating the degradation of spills and the hazards they pose, new assessments of the variety of fuels used by residents, and new methods for characterizing complex hydrocarbon mixtures in environmental samples without advanced instrumentation.




Gabriel Isaacman-VanWertz's research focuses on atmospheric chemistry, aerosol, and instrumentation. He earned his bachelor's degree in Earth and Environmental Science and Chemistry from Wesleyan University. He received his Ph.D. in Environmental Science, Policy, and Management from the University of California, Berkeley. He was a Postdoctoral Research Fellow at Massachusetts Institute of Technology where he designed and conducted laboratory studies of the fate of atmospheric compounds using a wide range of state-of-the-art instrumentation and methods.

**Wednesday, March 20, 2019 3:00 - 4:00 PM**

**Wallberg Building, 200 College Street, Room 407**



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