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Vehicle Emissions Policy: Are We Chasing Our Own Tailpipes?

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Ramsay Wright Zoological Laboratories
25 Harbord Street, Lecture Room 432
(Use elevators at 25 Harbord Street entrance)
University of Toronto

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Abstract: In the field of atmospheric science, two prominent objectives have emerged in the last half century: improving air quality and reducing greenhouse gas emissions to mitigate climate change. Emissions from the transportation sector, which relies heavily on the combustion of fossil fuels, are significant sources of both air pollutants and greenhouse gases, and thus have been subject to increasingly stringent regulatory standards. Tightening of these regulatory standards has largely focused on on-road automobiles by specifying maximum pollutant concentrations in the vehicle exhaust and by mandating minimum fuel economy to reduce carbon dioxide (CO_2) emissions. Meeting this complex set of regulatory constraints requires extensive engineering of existing engine technologies and increased implementation of biofuels. In this seminar, I will discuss the challenges of meeting new and upcoming regulatory standards, and developments in non-regulatory approaches to measuring vehicle exhaust. As part of this discussion, I will outline an emissions case study from an emergent engine technology introduced to meet stricter fuel economy standards, the gasoline direct injection (GDI) engine.

Biography: Naomi Zimmerman is a PhD candidate in chemical engineering at the University of Toronto's Southern Ontario Centre for Atmospheric Aerosol Research (SOCAAR). Naomi received her bachelor's degree in chemical engineering from the University of Waterloo in 2011, during which she spent two years working in industry as part of the co-operative education program. In October 2015, she will join the Center for Atmospheric Particle Studies (CAPS) at Carnegie Mellon University as a postdoctoral research fellow.

All students, faculty, and the general public are welcome.