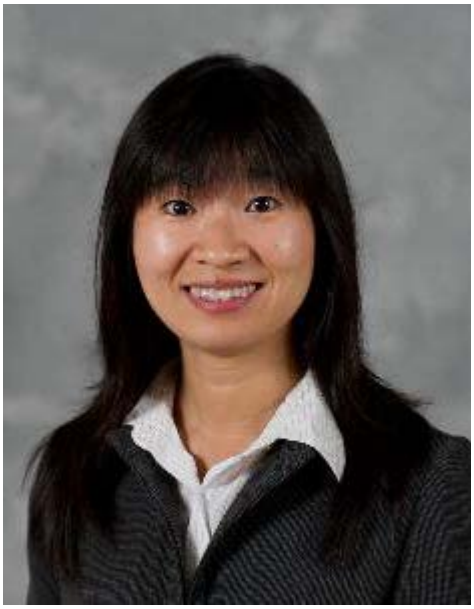
Endowed Distinguished Lecture Series

Secondary Organic Aerosols and Brown Carbon from Biomass Burning

Linking Chemistry to Climate and Health Effects

APRIL 22 at 11 a.m.

In person **EER 0.904 - Mulva Auditorium** / Zoom 98 138 561 486



NGA LEE "SALLY" NG

Professor

Organic aerosols dominate ambient fine particulate matter (PM2.5) mass concentration and have important impacts on air quality, climate, and human health. A major fraction of ambient organic aerosols are secondary organic aerosols (SOA), formed from atmospheric oxidation of volatile organic compounds followed by gas-particle partitioning. Biomass burning is a substantial and increasingly important source of carbon in the atmosphere and the atmospheric oxidation of biomass burning emissions can lead to the formation of SOA and brown carbon that can affect climate via interactions with solar radiation. In this work, we investigate SOA and brown carbon formation from oxidation of furan compounds, a major class of compounds emitted from wildland fires. Experiments are conducted in the Georgia Environmental Chamber facility (GTEC) under different conditions. A large suite of oxidation products is formed rapidly, including a multitude of nitrogen-containing organic compounds with strong light-absorption properties. Through integrated cellular reactive oxygen species and cell health measurements and detailed chemical characterization of organic aerosols, we also provide new insights into the components and chemical features that drive organic aerosol toxicity. Lastly, we introduce the Atmospheric Science and Chemistry mEasurement NeTwork (ASCENT), a new comprehensive, high-time-resolution, long-term measurement network in the U.S. for the characterization of aerosol chemical composition and physical properties, advancing our understanding of aerosol sources and characteristics on spatiotemporal scales not previously possible.

Dr. Nga Lee "Sally" Ng is the Love Family Professor in the School of Chemical & Biomolecular Engineering, School of Earth & Atmospheric Sciences, and School of Civil & Environmental Engineering at the Georgia Institute of Technology. She earned her doctorate in Chemical Engineering from the California Institute of Technology and was a postdoctoral scientist at Aerodyne Research Inc. Dr. Ng's research focuses on the understanding of the chemical mechanisms of aerosol formation and composition, as well as their health effects. Her group combines laboratory chamber studies and ambient field measurements to study aerosols using advanced mass spectrometry techniques. Dr. Ng serves as the Editor-in-Chief of *ACS ES&T Air*. Dr. Ng's research contribution has been recognized by a number of awards, including the Sheldon K. Friedlander Award and the Kenneth T. Whitby Award from the American Association for Aerosol Research (AAAR) and the Ascent Award from the American Geophysical Union (AGU). Dr. Ng is currently leading collaborative efforts to establish the Atmospheric Science and mEasurement NeTwork (ASCENT) in the US.

The University of Texas at Austin
Maseeh Department of Civil, Architectural and Environmental Engineering
Cockrell School of Engineering

caee.utexas.edu