

Venerdì 31 maggio 2019 alle ore **12:30** nell'aula **1P** del DICAM (Via Mesiano 77) la dott.ssa **Lynn R. Mazzoleni** (Michigan Technological University) terrà un seminario sul tema:

"Molecular-Level Observations of Biomass Burning Organic Aerosol"

Abstract

Wildfire and other forms of biomass burning are major sources of carbonaceous aerosols to the atmosphere and significantly impact visibility, human health, and our climate system.

Detailed

characterization of the physicochemical properties of atmospheric aerosol are crucial for an improved predictive understanding of biomass burning impacts. Recently the use of ultrahigh resolution mass

spectrometry has become increasingly popular for the analysis of organic aerosol samples due to its unparalleled ability to investigate its molecular composition. In our research approach, we use a non-

targeted approach to identify the molecular formula composition of samples.

In this seminar, I'll present our observations from 3 different atmospheres to provide a more complete picture of the significance of biomass combustion:

(1) Analysis of long-range transported aerosol

collected at the Pico Mountain Observatory in the North Atlantic (Azores, Portugal) indicated that a majority of the organic aerosol transported in the free troposphere were highly viscous/solid particles and therefore less susceptible to oxidation than the organic aerosol transported in the boundary layer.

(2) Analysis of ambient fog and aerosol collected in and near Bologna (Italy) indicated that the fog compositions were more oxidized than aerosols, implying that fog nuclei must be somewhat aged. The

fog and aerosol samples demonstrate the significance of the aqueous phase in transforming the molecular chemistry of atmospheric organic matter and contributing to secondary organic aerosol.

(3) Analysis of ambient wildfire aerosol samples collected in the Richland, Washington (United States) demonstrated a continuum of carbonaceous species spanning from C₅ – C₄₅. The compositions are dominated by extremely low volatility organic compounds that are very viscous and likely significantly contributing to the tarry nature of relatively fresh biomass burning aerosol particles.

Brief Biography

Dr. Mazzoleni is an Associate Professor of Chemistry and the Co-Director of the Chemical Advanced Resolution Methods (ChARM) Laboratory at Michigan Tech. Her primary research interests are focused on the identification of organic aerosol constituents from various atmospheric environments with a special interest in biomass combustion and aqueous phase chemistry. Dr. Mazzoleni's research group uses a combination of advanced mass spectrometry, liquid chromatography, and data science methods for a discovery-centered approach to identify organic molecules in atmospheric complex mixtures.

Il seminario è offerto nell'ambito del corso di laurea magistrale in Environmental Meteorology, ma tutti gli interessati sono benvenuti.

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