

## Identification and characterization of polar organic compounds in atmospheric aerosols: targeted and non-targeted approaches

Mahmoud Yassine and Ewa Dabek-Zlotorzynska

Air Quality Research Division, Environment and Climate Change Canada, Ottawa, ON, Canada

Organic aerosols (OA) account for a large fraction (20–90%) of the submicron atmospheric particulate mass with adverse consequences for climate and public health. Despite the abundance of OA, our understanding of the sources, formation processes and atmospheric properties of OA is limited. Atmospheric OA has both primary (directly emitted) and secondary (formed in the atmosphere from precursor gases) sources, which can be natural (e.g. vegetation) and/or anthropogenic (e.g. fossil-based vehicle exhaust or biomass burning). Due to their diverse sources, various formation pathways and complex multiphase aging processes, the OA fraction is a very complex mixture of low volatility, polyfunctional aliphatic and aromatic compounds containing carboxyl, alcohol, carbonyl, sulfo, nitro, and other functionalities. This high degree of chemical complexity of atmospheric organics has inspired a number of sophisticated approaches that are capable of identifying and detecting a variety of different analytes in OA.

This presentation will discuss current challenges and research directions in the analysis of polar organic substances associated primarily with PM<sub>2.5</sub>. Novel methodologies using various spectrometric (e.g. IM-QTOF-MS; FT-ICR/MS), chromatographic and hyphenated analytical techniques (e.g. UPLC-MS/MS, CE-MS) to identify and determine polar organics will be highlighted.