SEMINAR ANNOUNCEMENT

MARMARA UNIVERSITY

ENVIRONMENTAL ENGINEERING DEPARTMENT

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Secondary Organic Aerosol Production:

Methods and Measurements

Secondary organic aerosols (SOA) are formed by photooxidation of volatile organic compounds (VOCs) and nucleation and condensation of the oxygenated products. On a global scale, monoaromatic hydrocarbons of anthropogenic origin are estimated to be the source of 12% of the SOA while biogenic emissions of isoprene (C_5H_8), monoterpenes ($C_{10}H_{16}$), and sesquiterpenes ($C_{15}H_{24}$) are estimated to be the source of 46, 29, and 7% of SOA, respectively. The functional groups of organic substances comprising SOA (i.e., hydroxyl, carbonyl, carboxylic acid, sulfate, and nitrate) complicate sample processing, analysis, and identification of the characteristic aerosol products of VOC oxidation pathways. Only a very small fraction of the organic molecular species in SOA have been identified due to the complexity of precursor oxidation reactions and the need for (1) methodologies that are less labor intensive and suitable for thermally labile compounds and (2) analytic instrumentation that provides more complete resolution of complex mixtures for sensitive detection of molecular species. The work presented here includes measurements of semi-volatile VOCs and oxygenated organic compounds in essential oils of coniferous trees and in the Midwestern, USA with multidimensional gas chromatography and time-of-flight mass spectrometry (GC×GC-TOFMS).

Friday, April 04, 2014 • 10:30-11:30

Engineering Building - B, Conference Room #MB144