



# **Environmental Analytical Chemistry: Organics/Aerosols/Surfaces**

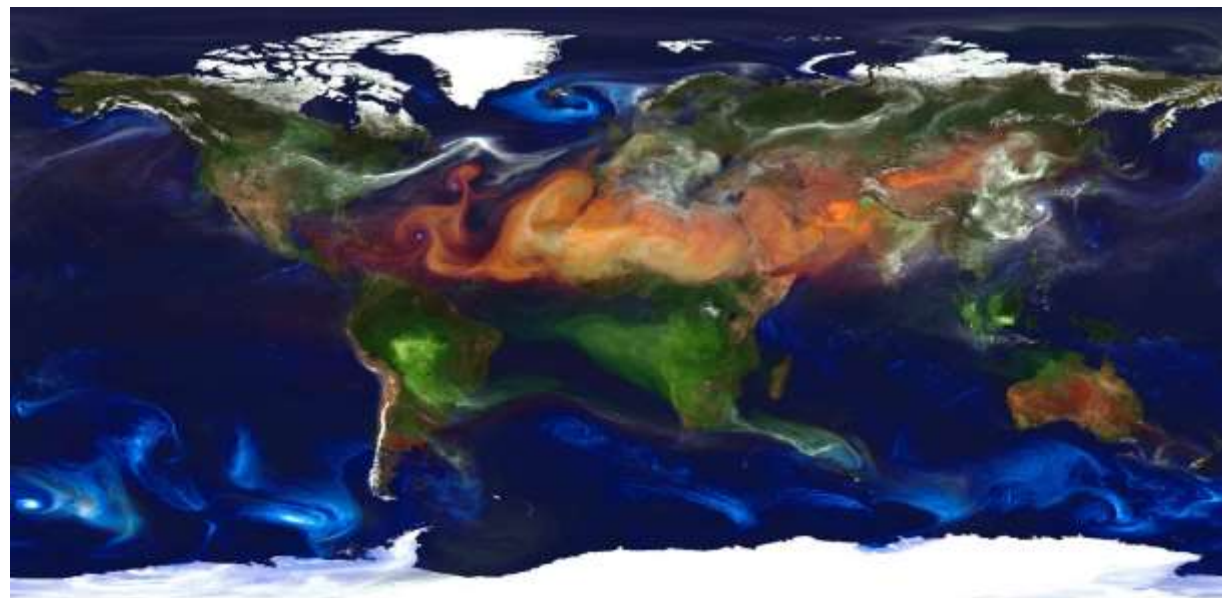
Research in the O'Brien Group

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# Organics in the atmosphere/biosphere:

Reactions in the atmosphere → Complex organic mixtures







Organic aerosols in polluted regions around the world



Chemical composition of Dew water



Photolysis of organics in droplets



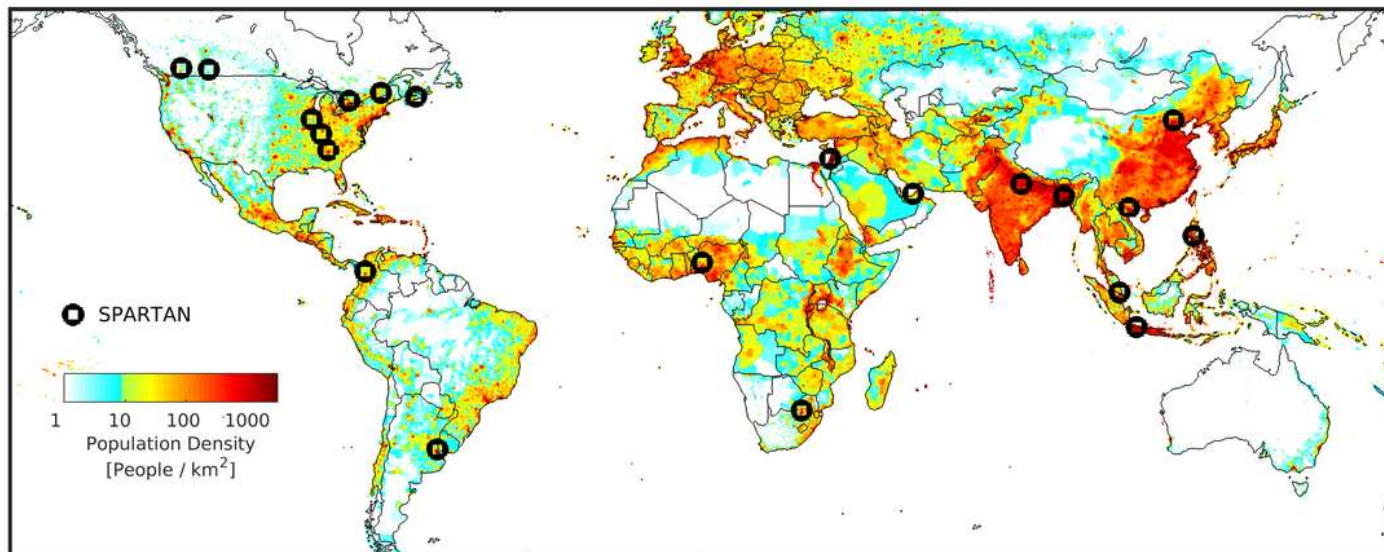
# Organic aerosols in polluted regions around the world



Soft ionization- mass spectrometry



Gas Chromatography/ Mass spectrometry



SPARTAN – Global Particulate Matter Network

# Chemical composition and reactions in dew

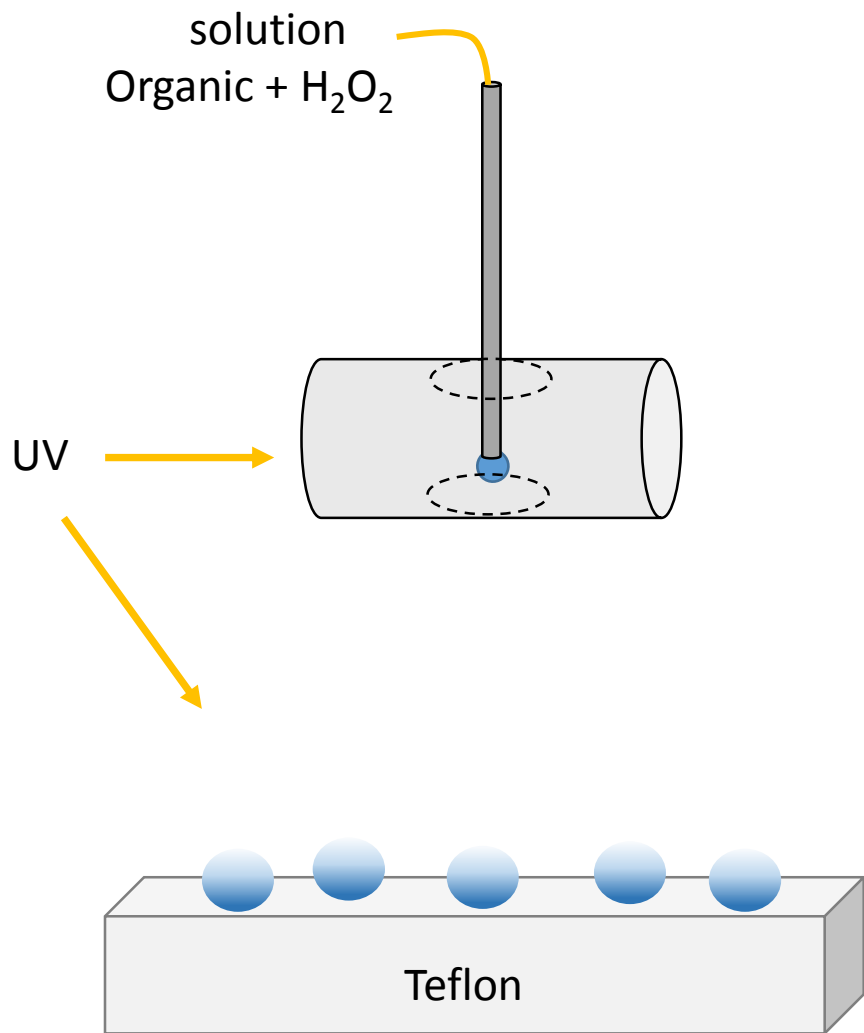


unknown organic composition → deposit from air and dissolve from surface.





# Photolysis of organics in droplets



Photolysis/ photochemical reactions of water soluble organics in small droplets (~4-5  $\mu$ L)



GC/MS



LC/MS





# Students will learn:

- Analysis of known and unknown organics mixtures with
  - GC/MS, LC/MS, ESI-MS
- Sample collection and sample preparation
  - extracting, concentrating, derivatization
- Advanced mass spectrometry data analysis

# Interested in taking...



Currently I have 2 students:

- One sophomore and one masters student

Spring 2017

- Interested in 3-4 students, freshmen and sophomores (1-2) and 1-2 juniors.

