Proposed Focus Group

# Thermodynamic, Chemical, and Microphysical Properties of Mixed Organic-Inorganic Aerosols

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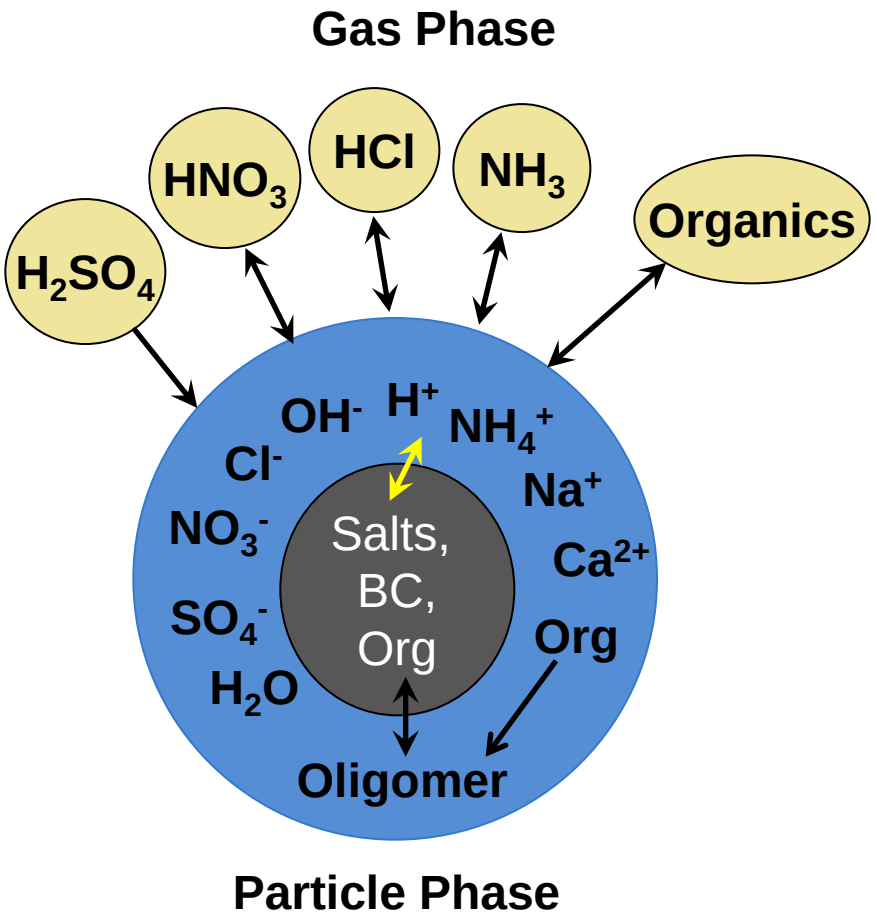
# Motivation

- SOA formation mechanisms are still poorly understood
- SOA is almost always mixed with inorganic species such as ammonium sulfate and nitrate
- SOA often includes species such as organosulfates and oligomers, which are likely formed via reactive uptake of organic gases
- Organics are known to affect deliquescence and water uptake in mixed organic-inorganic particles
- Condensation of organics is fast, but evaporation is sluggish
- Available SOA schemes simply do not treat these processes properly



# Potential Activities of the Focus Group

- Characterize the phase state (solid, liquid, mixed) and deliquescence behavior of mixed SOA-inorganic aerosols as a function of RH and composition
- Investigate condensation and evaporation kinetics of organics and inorganics as a function of chemical composition, phase state, and morphology
- Investigate in-particle reactions and products
  - Rate of formation of organosulfates, oligomers, other products?
  - Are these reactions reversible?
  - Are the products non-volatile?
- Carefully parameterize these processes for inclusion in aerosol model
- Integrate findings from other focus groups into the improved model
- Evaluate and optimize the performance of the new treatments in a regional model using appropriate field observations
- **Implement and evaluate the new SOA formation and properties treatments in a global model**