SOA properties and composition using the UCI large volume slow flow aerosol flow tube

Objective: Laboratory-controlled experiments designed to study the properties of SOA (evaporation/uptake of SVOCs) and its chemical composition.

Climate Relevant SOA Property(s) Investigated: Process-relevant properties.

Lead personnel: B. J. Finlayson-Pitts, V. Perraud, C. Kidd – Univ. of Calif., Irvine.

Collaborators: AirUCI scientists including experimentalists, theorists and 3-D airshed modelers.

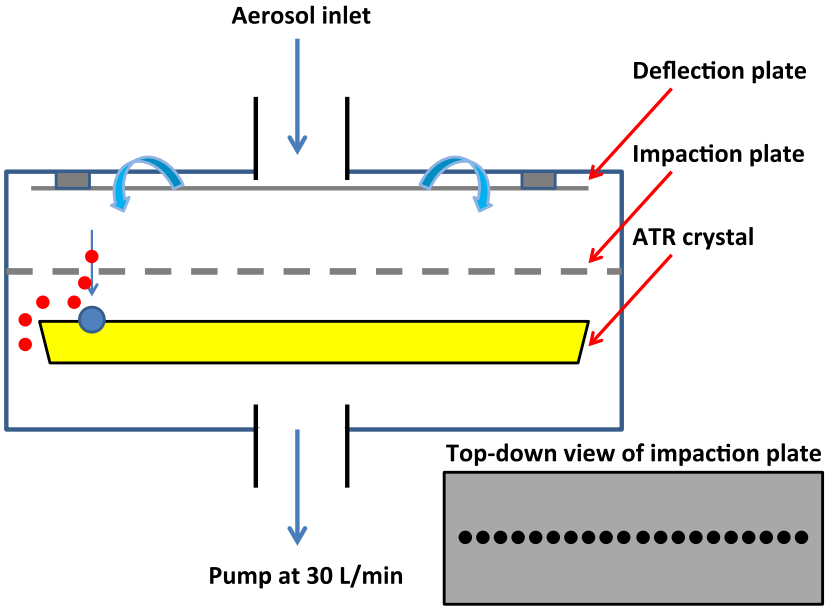
Summary of progress (Kidd et al., *in preparation*):

- Built a new impactor that allows the collection of SOA particles onto an ATR-FTIR crystal (measurement of evaporation/uptake of VOCs).
- Experiments at different RH showed that the SOA particles from O_3 + α-pinene remain solid up until very high RH (> 90%).

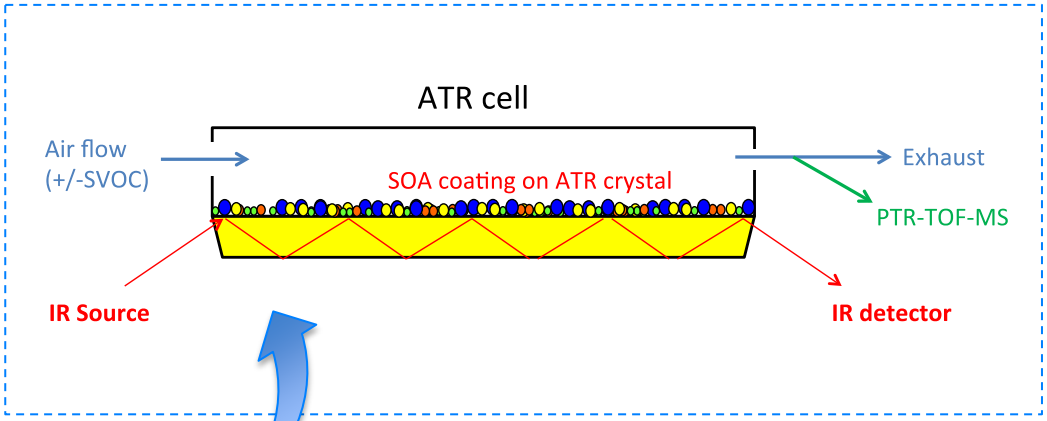
Challenges or needed resources/collaborators: -

Results (Part 1/2)

- UCI unique flow tube (supported by DOE) with a residence time at 34 Lpm of ~ 31 min
- Reaction studied:
O_3 (0.6 ppm) + α-pinene (0.6 ppm) (no seed)
- Experiments performed at RH = 0-90%



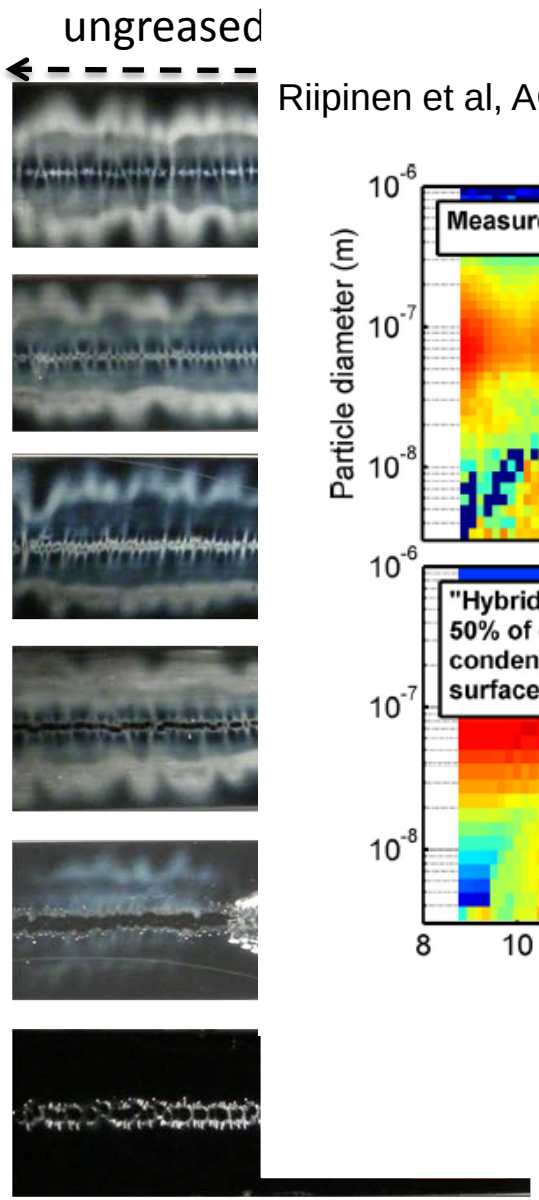
Analysis by FTIR



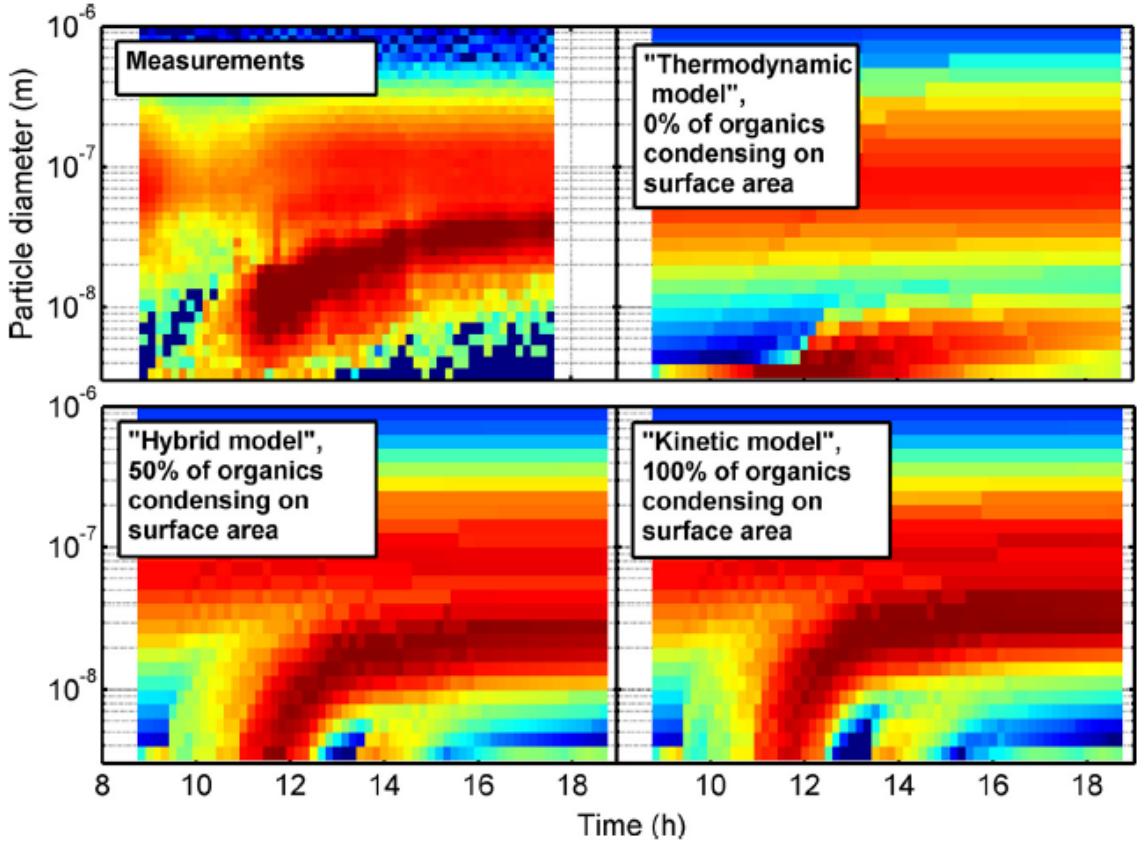
Impactor was designed for FTIR studies with SOA

…but, we found something unusual!!

Results (Part 2/2)



Riipinen et al, ACP (2011)



c) Bounce and capture

bounce off the
ecaptured".

lifferent

'acidic seed =

erize the
nese SOA
ake

- Could make significant impact on model prediction.