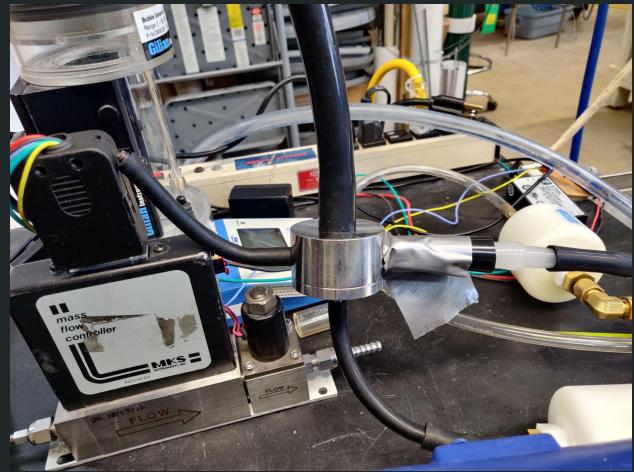


Undergraduate Research in Aerosol Science & Technology



Jacob Dong
Prof. Hui Ouyang

Supported by UTD MECH



Summary (03/22 - 03/28)

UT Dallas Student

Junior Majoring in Mechanical Engineering

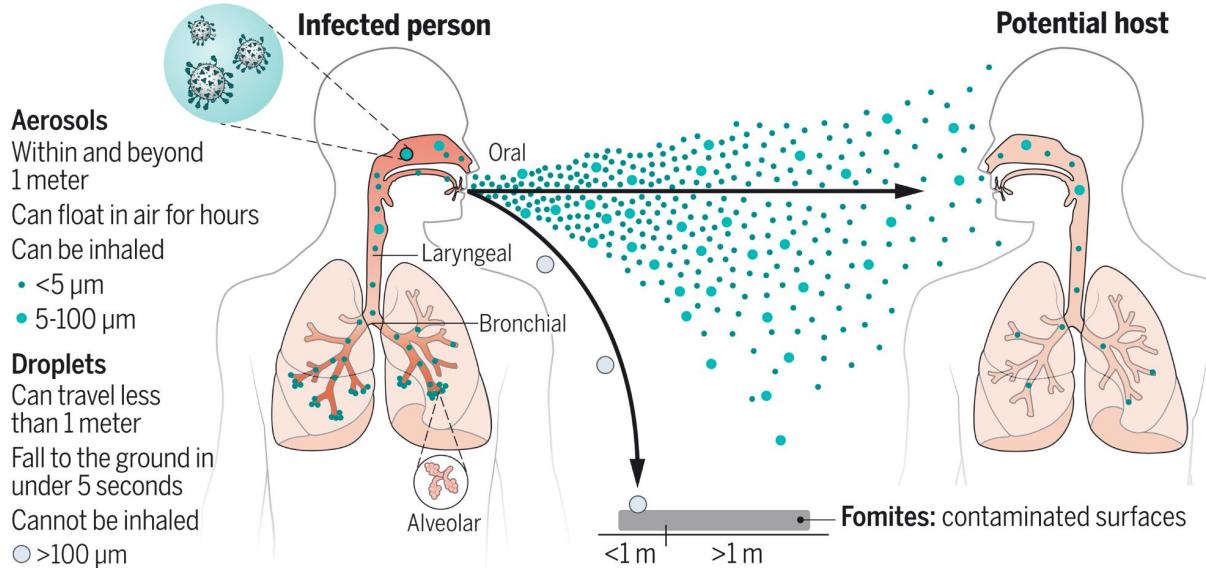
Thermodynamics class S2021

Visiting the University of Minnesota, Twin Cities

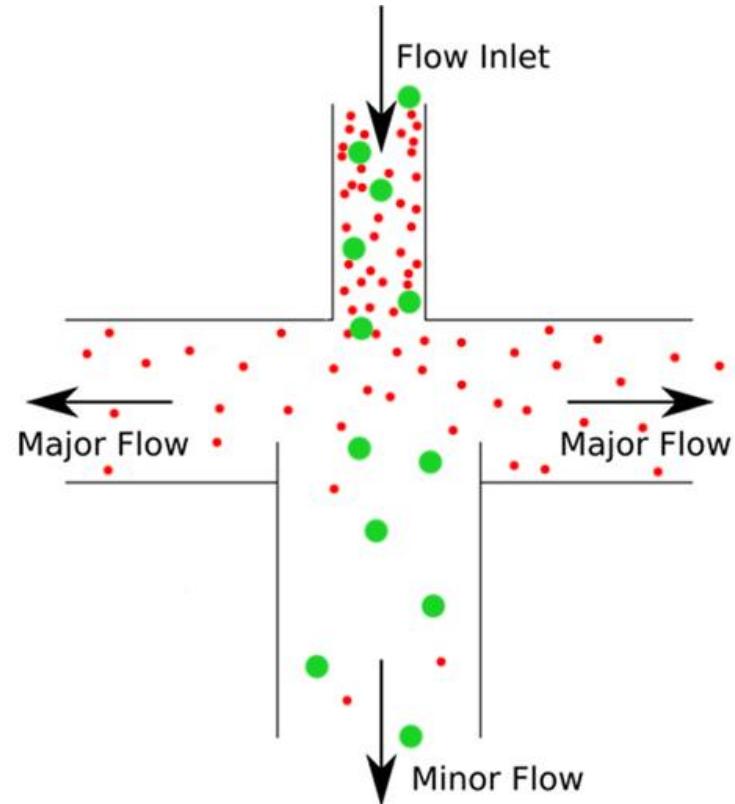
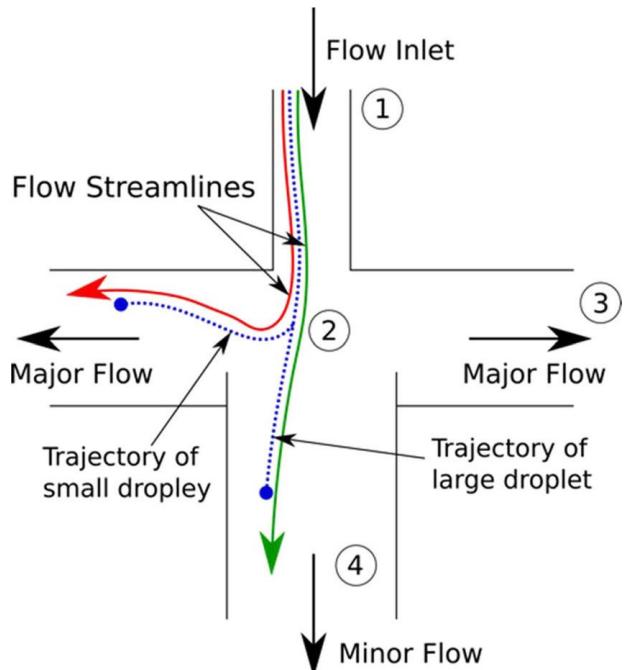
Professor Hogan's Particle Calibration
Laboratory and Aerosol Diagnostics Laboratory



What is Aerosol Science and Technology?



What is a Virtual Impactor?

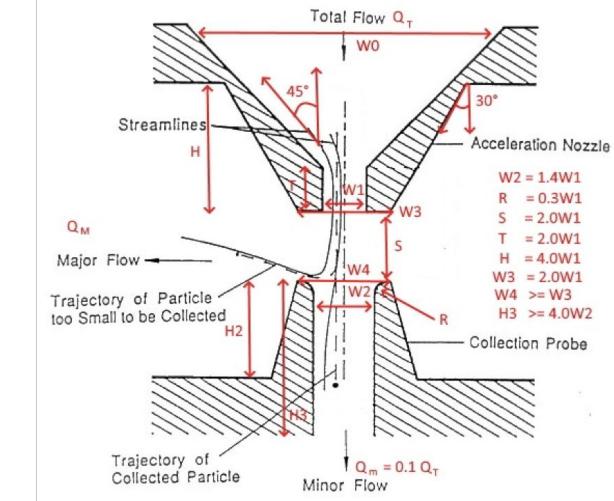
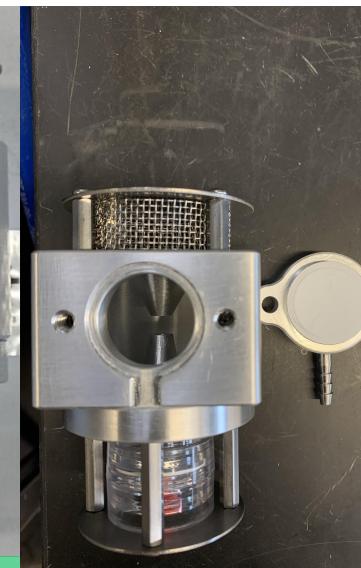
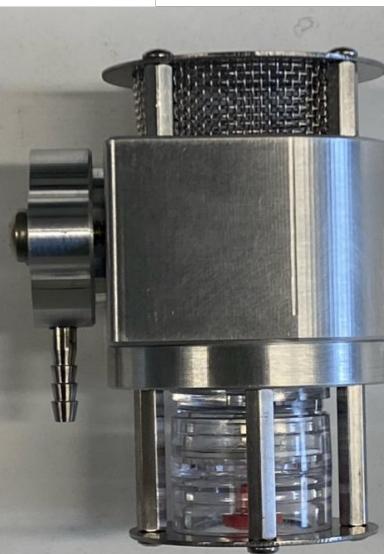
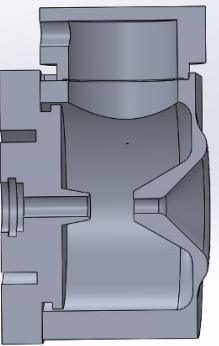
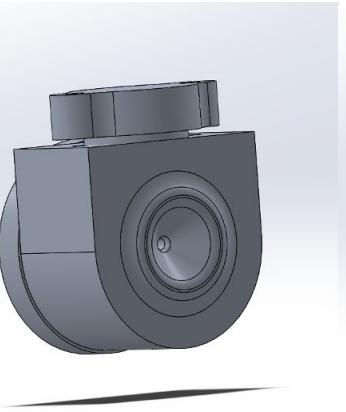
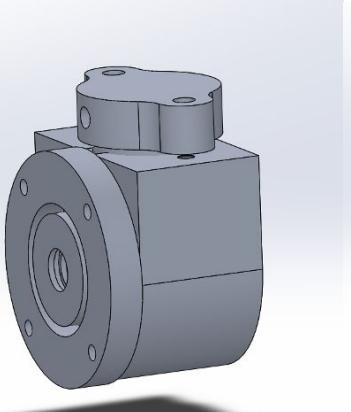


Designing Virtual Impactor

CFD

CAD

Design 10:1, 2.5 μ cutoff size



Virtual Impactor Calibration Test Schematic

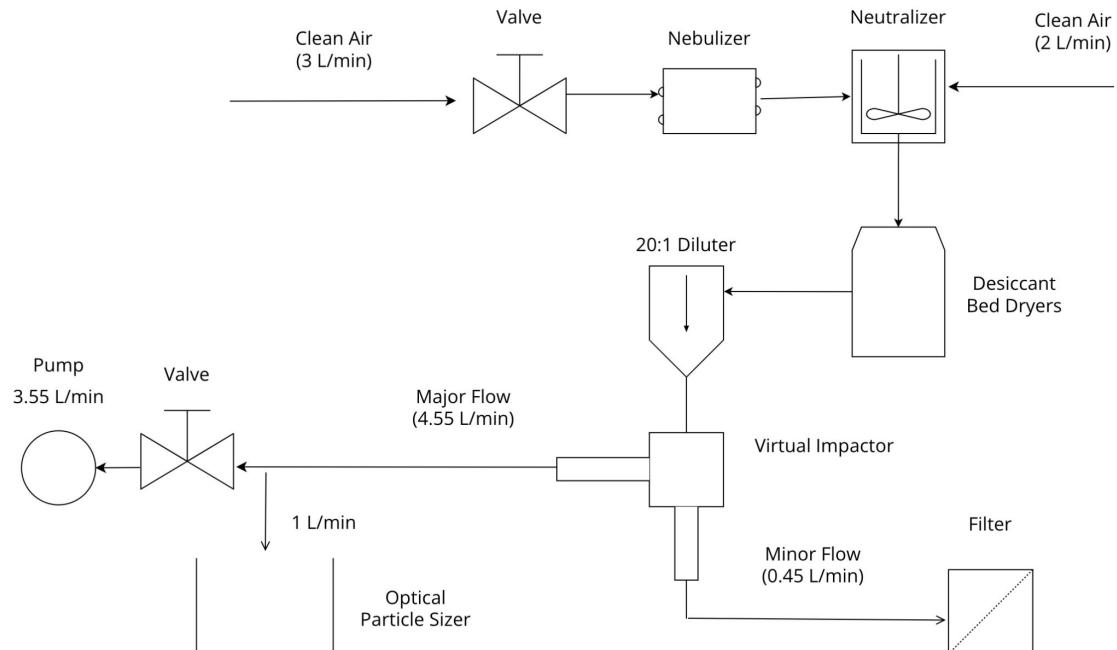
P&ID

Clean Pressurized Air

Optical Particle Sizer

Regulated flow rates from:

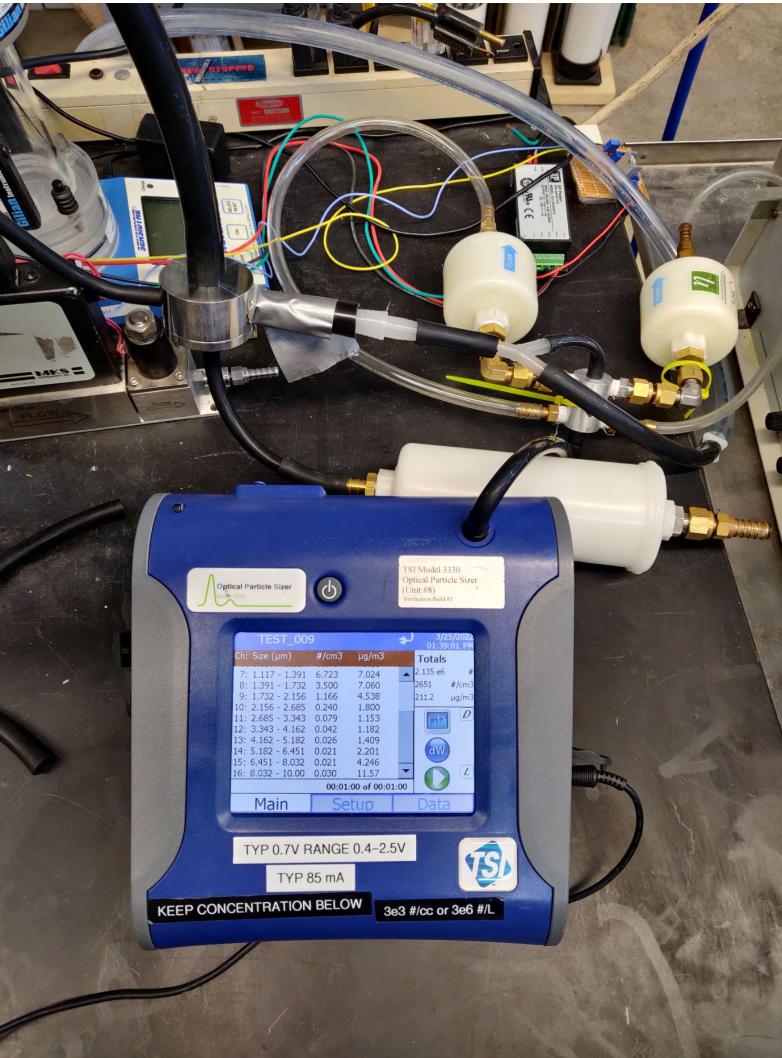
- Minor flow, 0.45 L/min
- Major flow, 4.55 L/min
- Inlet, 5 L/min
- Into optical particle sizer, 1 L/min



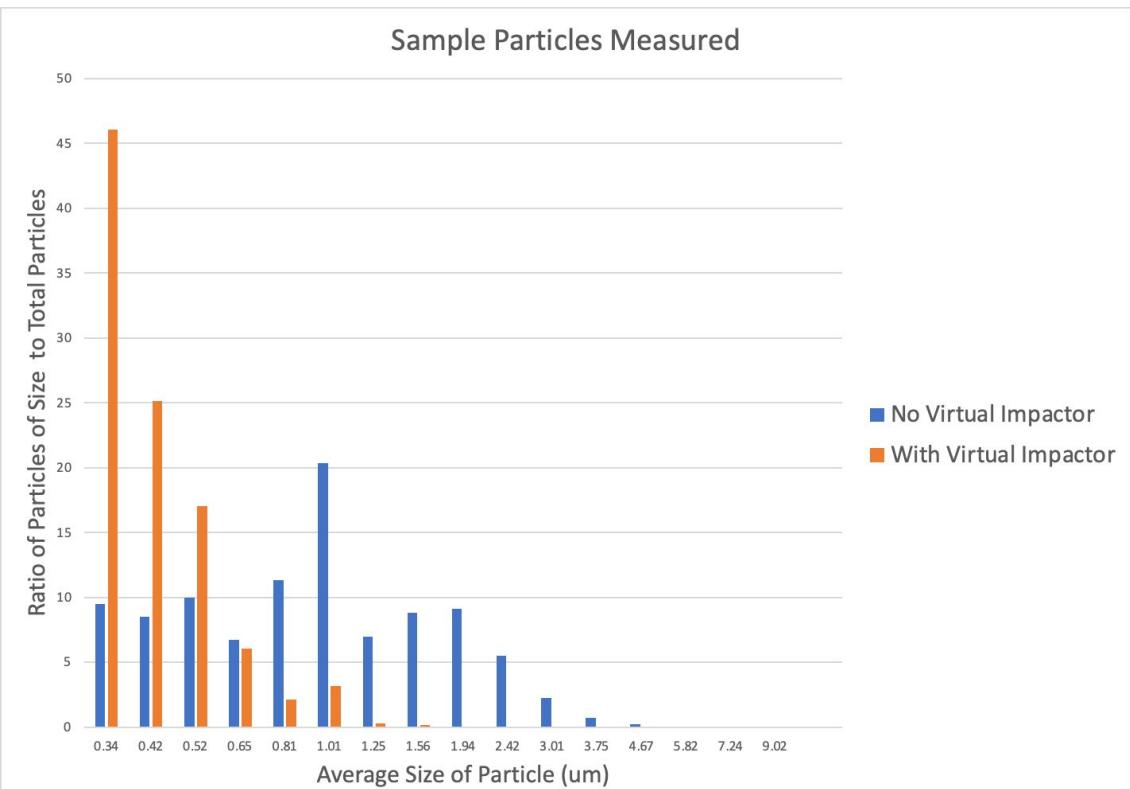
Virtual Impactor Calibration Test

What is the final measurements?

How was the experiment set up?



Virtual Impactor Effects

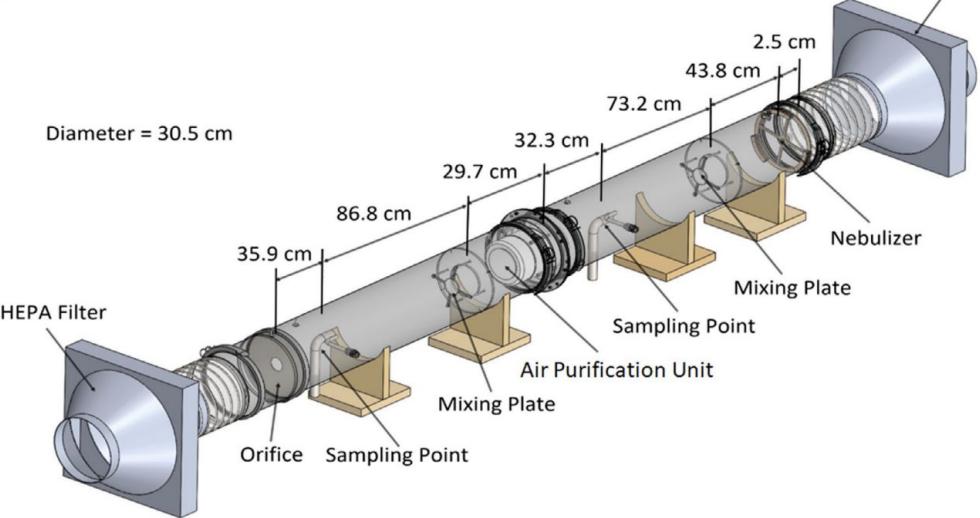


Definitely reduced concentrations of larger particles $> 1 \text{ um}$

Monodispersed aerosols, specific sizes

ASHRAE Wind Tunnel

<https://onlinelibrary.wiley.com/doi/full/10.1111/ina.12847>

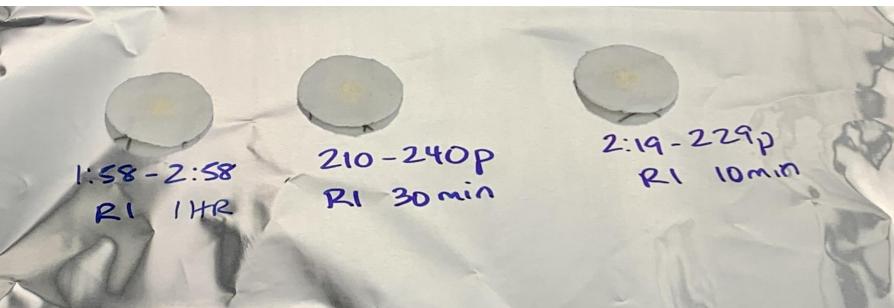


Virus Testing Mini-Project

In collaboration with the College
of Veterinary Medicine

Moving a setup from one campus
to another

Biosafety Laboratory



Outside of the Laboratory

Minneapolis Bouldering Project

Exploring Minneapolis

Catching up on classes in the evenings



Questions?

