

Reflective Properties of Aerosols Relative to Environmental Factors



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Aerosols

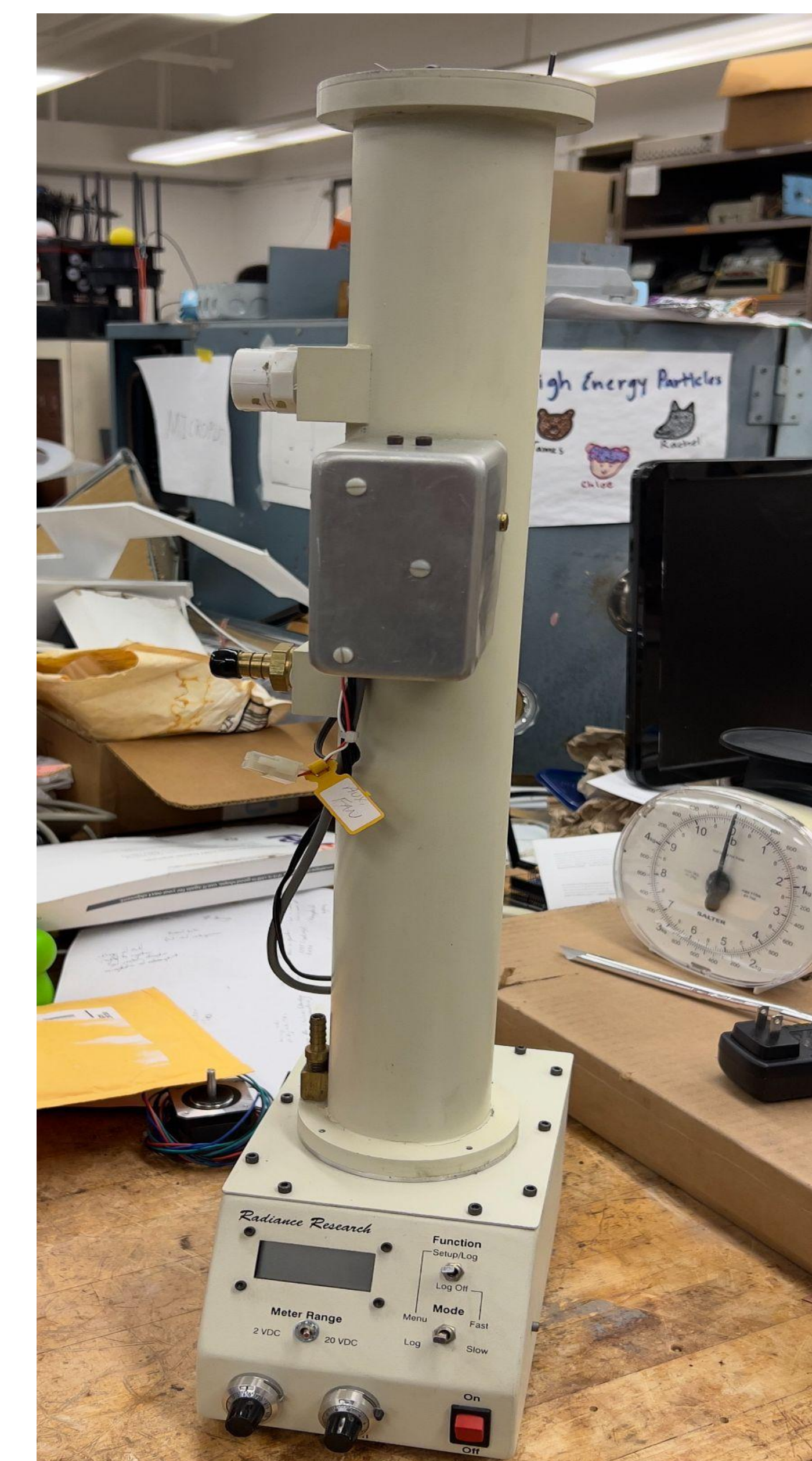
- Aerosols are particulate clumps of various molecules that are suspended in air.
- We are interested in aerosols that can reflect and properly scatter light, such as H₂SO₂ and calcite.

Environmental variables

- While some chemical aerosols, such as sulfur derivatives, have been studied at natural conditions, data does not exist at extreme conditions for some compounds
- Low temperatures ranging down to -80°C with relative humidity ranging from 0% to 100%

Nephelometer

- Utilizes the properties of particle light scattering to calculate their scattering coefficient, or with a known coefficient it can find concentration.
- The scattering coefficient compares the light scattered by the aerosol-containing gas medium vs. the light scattered by the span calibration gas which has a known scattering coefficient



Hypothesis

- When crystallized due to low temperatures, the formation of a crystal lattice will lead to constructive interference that reinforces reflection
- We also hypothesize that increased relative humidity has a positive correlation with the scattering coefficient, as a humid environment allows larger aerosols to form

