Center for exolife sciences
Workshop

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Who am I?

- Experiments I do:
  - Gas phase experiments
  - Matrix isolation experiments

- Calculations:
  - Spectroscopy: IR and UV-vis
  - Reactions
My research interests

• Dynamic between life, atmospheric chemistry and spectroscopy

• The eyes we get from spectroscopy

• The use of theoretical spectroscopy to predict and understand spectroscopy
My current projects: Dimethyl Sulfides

- Infrared, Raman and Electronic spectroscopy
- How do we tell them apart spectroscopically?
- Does their spectroscopy affect their atmospheric fate?
My current projects: Phosphine oxidation

- Is there a global atmospheric gaseous phosphorus cycle?

- What is the oxidation mechanism of phosphine in the atmosphere?

- Can the emission and following oxidation of phosphine influence cloud formation in the atmosphere?

- If phosphine is a good biomarker, oxidation products and their spectral signatures should be known
My current projects: Reactions using matrix isolation spectroscopy

- Matrix Isolation allows us to observe reactive compounds that would react immediately in the gas phase

- Currently, it is possible to perform microwave discharge before deposition → Plethora of products

- More selective methods are desired:
  - Selective hydroxyl radical formation
  - Laser to perform photodissociation reactions
How do my research interests work with CELS?

• We need accurate spectra of possible biomarkers
• We need to be able to tell compounds with similar spectral features apart
• We need information on the atmospheric fate of those biomarkers
Thank you for your attention!