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How to measure spectra of planetary atmospheres in the laboratory ?

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The habitability of (exo)planets depends on many factors, including the properties of the atmosphere. Spectra of planetary atmospheres are useful for the determination of the composition of the atmosphere, the detection of clouds, and the study of dynamical processes. Furthermore spectra taken in atmospheric transparency windows can shed light on low clouds and the surface of the planet.
The interpretation of spectral data requires accurate molecular constants for the species involved, as well as a theoretical comprehension of the phenomena contributing to the emission and absorption process occurring in various layers of the atmosphere. Although these data are available for the terrestrial atmosphere, the conditions in terms of density and temperature of many solar and extra solar planets are often very different from the Earth, and adequate data and theory are insufficient to describe emission and absorption processes properly.
Laboratory experiments can be useful to fill the gap in our knowledge and provide new spectral data that might also contribute to an improvement of theoretical models.
Here I will present some experimental techniques and recent laboratory measurements in conditions similar to the atmosphere of Venus.

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