

L12a **Planetary Spectra Libraries**

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In this talk we present our work on planetary spectra libraries. Spectra libraries are an important tool for studying both solar system objects and extrasolar planets. We compiled the Tohoku-Hiroshima-Nagoya Planetary Spectra Library (A&A 507 1649-1658), the first observational spectra library to include all of the solar system planets. By collecting all of the spectra in an easy to compare format, we discovered a new method to categorize planets based on their infrared colors. Three groups of planets can be distinguished: gas planets, soil planets and ice planets. This method could be used with extra solar planets.

The THN-PSL covers wavelengths from 0.45-2.5 microns. Last year we extended our work further into the visible with observations at Gunma Observatory. The Tohoku-Gunma Planetary Spectra Library (in preparation), covers a wavelength range from 0.4 to 0.8 microns. In the THN-PSL, Venus is difficult to distinguish from ice planets, but in shorter wavelengths of the TG-PSL, Venus can easily be distinguished from an ice planet. Our work on these two libraries shows that low resolution spectroscopy, or color observations, in the visible to near infrared can reveal much information about the nature of the planet. These planetary spectra libraries will provide an observational reference for future science missions, such as TPF-C.