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Three Micron Spectra of Saturn and Titan

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The recent historic encounter of Cassini with the Saturnian system and the Huygens probe on the surface of Titan greatly expanded human knowledge on the atmospheres of Saturn and Titan. The Visible and Infrared Mapping Spectrometer (VIMS) on Cassini covers visible and near-IR ranges, but its basic function is to take images and its spectral resolving power (R ~ 100) is much less than those of typical spectrometers at ground observatories. The ground-based spectroscopy is, therefore, still a powerful way to investigate the atmospheres of Saturn and Titan. We present moderate-resolution spectra (R ~ 1,000) of Saturn obtained with CGS4 at UKIRT and high-resolution spectra (R ~ 25,000) of Titan obtained with NIRSPEC at Keck II. In order to analyze the spectra, we have constructed atmospheric models including Non-LTE radiative processes of molecules and reflections of clouds/haze. We will present synthetic spectra of Saturn and Titan; and discuss mixing ratios of molecules and cloud/haze characteristics.