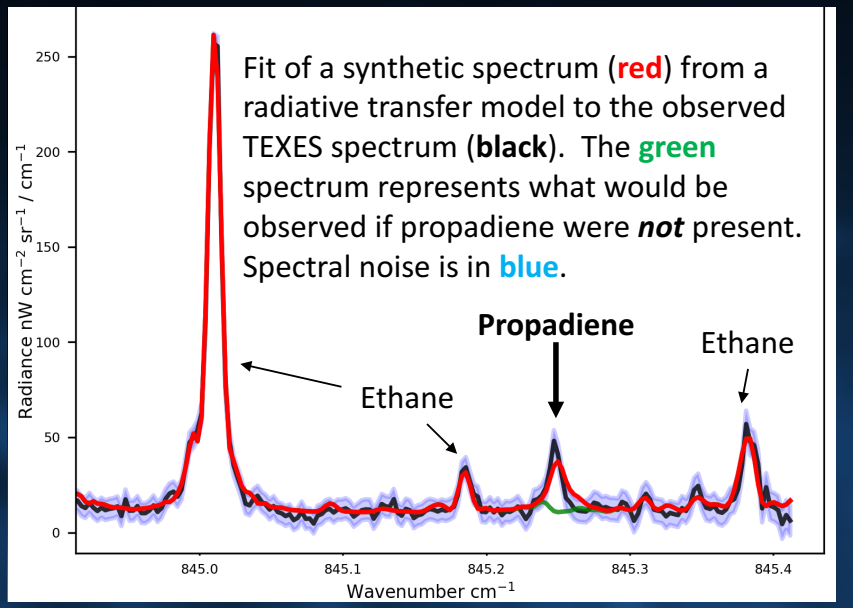
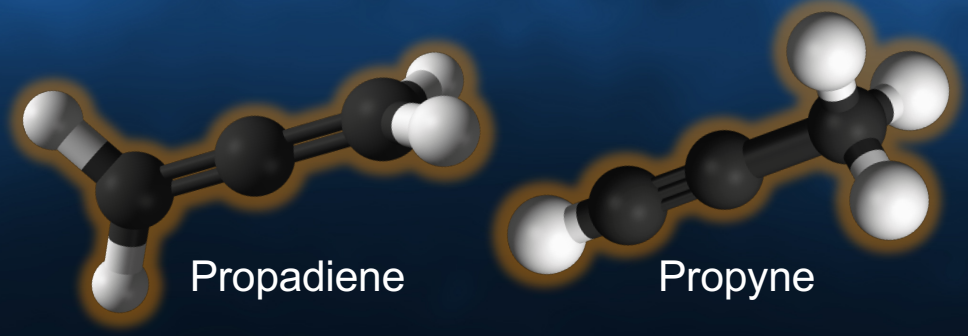
Molecular Cousins Discovered on Titan

Infrared observations with the TEXES instrument at IRTF have revealed the presence of the propadiene molecule on Titan. This compound has evaded detection for 20 years, including by the Cassini spacecraft, but was finally detected due to improved spectroscopic knowledge of the molecule. Propadiene is an isomer of propyne – though both molecules have the same chemical composition, the difference structures give rise to different chemistries – and there is about one-tenth as much propadiene as there is propyne in Titan's middle atmosphere. A detailed comparison of the amount of each molecule on Titan can help reveal the availability hydrogen in its atmosphere and promote a better understanding of the Saturnian moon, through future mapping by ground-based telescopes.



NASA InfraRed Telescope Facility (IRTF), Mauna Kea HI



Lombardo et al. (2019), *ApJ Letters*