# Aromatic, Aliphatic, Enigmatic: The Chemistry of Titan

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The extraordinary complexity of Titan's atmospheric chemistry far surpasses that of any other solar system atmosphere. With its thick N2 atmosphere and stable bodies of liquid on its surface, Titan also possesses many physical processes that are similar to those that occur on Earth. The connection between Titan's surface and atmosphere is unique in our solar system; atmospheric chemistry produces materials that are deposited on the surface and subsequently altered by surface-atmosphere interactions such as aeolian and fluvial processes resulting in the formation of extensive dune fields and expansive lakes and seas. Titan's atmosphere is favorable for organic haze formation, which combined with the presence of some oxygen-bearing molecules indicates that Titan's atmosphere may produce molecules of prebiotic interest. The combination of organics and liquid, in the form of water in a subsurface ocean and methane/ethane in the surface lakes and seas, means that Titan may be the ideal place in the solar system to test ideas about habitability, prebiotic chemistry, and the ubiquity and diversity of life in the universe. I will review our current understanding of chemistry on Titan forged from the powerful combination of Earth-based observations, remote sensing and in situ spacecraft measurements, laboratory experiments, and models. I will conclude with some of the questions that remain after Cassini-Huygens.