

# Enceladus' Low Mass Organics

Khawaja, *et al.* (2109), MNRAS.

Data from NASA's Cassini spacecraft reveal low-mass organic compounds in ice grains from Saturn' moon Enceladus.

- In Earth's hydrothermal systems, soluble, reactive Oxygen-, Nitrogen-bearing, and aromatic compounds are known precursors for the synthesis of biologically-relevant organic molecules, such as amino acids.
- On Enceladus, these originate at depths, evaporate when they reach

the water surface, and quickly adsorb onto ice grains that were sampled by the Cosmic Dust Analyzer (CDA) on the Cassini Spacecraft.

- Amino acids are required for life on earth, but are also commonly produced by abiotic chemical processes in the solar system. Whether these compounds would be used by life beyond Earth, the presence of the detected reactive compounds bolsters the hypothesis that Enceladus' ocean may be a habitable environment.

Figures: Jets of water ice, complex organics and other contaminants are jettisoned into the space environment surrounding Enceladus (above). The illustration (right) shows how the newly detected soluble organics present inside Enceladus' water-percolated hydrothermally active hot core can react to form e.g. amino acids, which then rise upward through the ocean, adsorb onto water ice grains, and are expelled into space to be tasted by Cassini.

