

## Organics in Comet 67P: Pure Hydrocarbons vs. Alcohols

**M. Schuhmann**<sup>1</sup>, K. Altwegg<sup>1,2</sup>, H. Balsiger<sup>1</sup>, J.-J. Berthelier<sup>3</sup>, J. De Keyser<sup>4</sup>, B. Fiethe<sup>5</sup>, S. A. Fuselier<sup>6,7</sup>, S. Gasc<sup>1</sup>, T. I. Gombosi<sup>8</sup>, N. Hänni<sup>1</sup>, M. Rubin<sup>1</sup>, C.-Y. Tzou<sup>1</sup>, S. Wampfler<sup>2</sup>

(1) Space Research and Planetary Sciences, University of Bern

(2) Center for Space and Habitability, University of Bern

(3) Institut Pierre Simon Laplace, CNRS, Université Pierre et Marie Curie

(4) Koninklijk Belgisch Instituut voor Ruimte-Aeronomie, Institut Royal Belge d'Aéronomie Spatiale

(5) Institut für Datentechnik und Kommunikationsnetze, TU Braunschweig

(6) Space Science Directorate, Southwest Research Institute

(7) University of Texas at San Antonio

(8) Department of Climate and Space Sciences and Engineering, University of Michigan

### I. Abstract

Comets are unique objects of study. Their formation in the outer region of the protoplanetary disk protected them from high temperatures and led to preservation of the original material that had formed our solar system. Of special interest are hereby the organics as their presence is linked to fundamental questions like the evolution of our solar system or the origin of life.

Reports on the presence of organic material in comets have been provided from various sides often using different remote techniques such as radio telescopes. However, for some organics like saturated aliphatic hydrocarbons these approaches are limited due to weak molecular dipole moments. Thus, spacecraft missions play an important role in the detection of organic molecules in comets as in-situ measurements show a much broader range of organic molecules present in comets: The Giotto Mission already revealed the presence of complex organics in comet Halley (Mitchell 1987) and the Rosetta Mission, with its long-term investigation period of more than two years (Glassmeier et al. 2007), finally revealed a complexity and diversity of the organic composition far beyond what was expected (Le Roy et al. 2015 and Altwegg et al. 2017).

Among the mass spectrometers onboard the Rosetta orbiter and lander Philae, the ROSINA Double Focusing Mass Spectrometer (DFMS) experienced the longest measurement time (Altwegg et al. 2017). With a high mass resolution and high sensitivity (Balsiger et al. 2007), it is predestined to decipher the complex organic composition. In a first step a large identification and quantification campaign of aliphatic and aromatic hydrocarbons in the coma of 67P was performed. Now the presence of primary and secondary alcohols is under investigation. Hereby a combined approach of laboratory calibration studies and space data analysis is used.

The presented work focuses on the latest results of the hydrocarbon and alcohol campaign. The calculated relative bulk abundances of saturated hydrocarbons will be shown together with the first results of the alcohol identification campaign. Furthermore, the relation and impact on each other will be discussed.

### II. References

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