ON THE SPECTROSCOPY OF ACYLIUM- AND THIOACYLIUM IONS

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Acylium- and thioacylium ions, R-CO^+ and R-CS^+, are a class of molecular ions of relevance for astrochemistry that have received relatively little attention from molecular spectroscopy so far. Triggered by our first spectroscopic study of the polyatomic HC_3O^+ and HC_3S^+ species,[1] it was not long until these two ions as well as the methyl variant CH_3CO^+ were detected in space.[2] Here, we would like to present a status report on the spectroscopic studies of acylium- and thioacylium ions at Cologne that make use of various action spectroscopy schemes in combination with state-of-the-art ion trap machinery.

[1] doi:10.1080/00268976.2020.1776409 S. Thorwirth, M. E. Harding, O. Asvany, S. Brünken, P. Jusko, K. L. K. Lee, T. Salomon, M. C. McCarthy, and S. Schlemmer, Descendant of the X-ogen carrier and a "mass of 69": Infrared action spectroscopic detection of HC_3O^+ and HC_3S^+, Mol. Phys. 118, e1776409 (2020).

[2] doi:10.1051/0004-6361/202040076 J. Cernicharo, C. Cabezas, S. Bailleux, L. Margulès, R. Motiyenko, L. Zou, Y. Endo, C. Bermúdez, M. Agúndez, N. Marcelino, B. Lefloch, B. Tercero, and P. de Vicente, Discovery of the acetyl cation, CH_3CO^+, in space and in the laboratory, Astron. Astrophys. 46, L7 (2021) and references therein.