ABSTRACT BOOK

COST Action CM0805 *The Chemical Cosmos*

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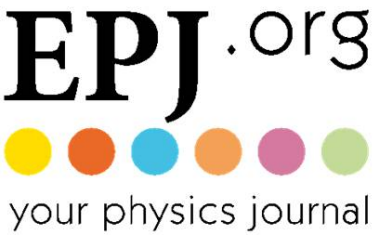

Edited by EWELINA SZYMAŃSKA

Anion Chemistry On Titan: Probing the Destruction Mechanisms of Nitrile Anions by Interaction with Photons

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The aim of this work is to study the interaction with VUV photons of mass-selected negative ions relevant for the understanding of Titan atmosphere. Characterization of their formation [1] and destruction rate is of fundamental importance for modeling Titan ionosphere chemistry and understanding the observations of heavy anions by the CAPS/ELS spectrometer on board of the CASSINI spacecraft. The objective here is to measure their transformation into smaller anions through photodissociation and their destruction through photodetachment. The parent anions CN^- are produced from CH_3CN in the APCI source of a commercial mass spectrometer LTQ XL (Thermo Scientific) [2,3] and reacted with HC3N in the trap to produce heavier anions through the CN^- + x $HC_3N \rightarrow (HC_3N)_yC_{2p+1}N^-$ + z HCN processes. These product anions are then mass-selected in the trap and irradiated with VUV photons (5 - 21 eV) from the DESIRS beamline. Their decay is followed as a function of irradiation time as illustrated in Figure **??**.

Acknowledgments
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[2] A. R. Milosavljevic, C. Nicolas, J. Lemaire, C. Dehon, R. Thissen, J.-M. Bizau, M. Refregiers, L. Nahon and A.Giuliani, Phys.Chem.Chem.Phys. 13 15432 (2011)
[3] A. R. Milosavljevic, C. Nicolas, J.-F. Gil, F. Canon, M. Refregiers, L. Nahon and A.Giuliani J. Synchrotron Rad. 19,174 (2012)

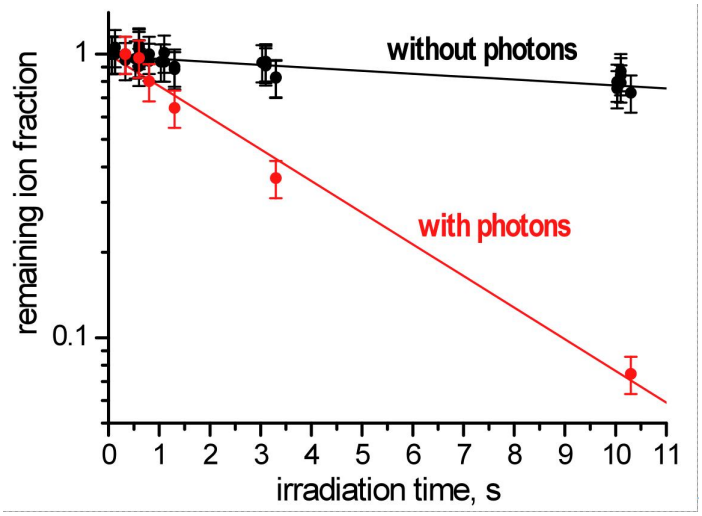

Figure: Trap ion induced loss by photodetachment: comparison of the exponential decay of the measured $(HC_3N)_3C_5N^-$ anion signal as a function of the irradiation time with and without synchrotron light for a photon energy of 8 eV.