

Abstract Submitted
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Dissociative Electron Attachment Dynamics in the Nucleobase Uracil and Related Molecules¹ DANIEL SLAUGHTER, Chemical Sciences, LBNL, YOSUKE KURIYAMA, YU KAWARAI, YOSHIRO AZUMA, Sophia University, CARL WINSTEAD, VINCENT MCKOY, California Institute of Technology, THORSTEN WEBER, ALI BELKACEM, Chemical Sciences, LBNL — We report the dynamics of dissociative electron attachment (DEA) in the biologically-relevant molecule uracil and the diazines pyrazine and pyrimidine. Our DEA reaction microscope [1] consists of a 3D momentum-imaging spectrometer, a pulsed low-energy electron gun and an effusive gas target. The experimental approach allows the measurement of kinetic energy and angular distributions of ionic fragments produced by DEA, in some cases elucidating the total kinetic energy release following two-body breakup. By comparison of calculations of the electron attachment probability in the molecular frame with measured ion angular distributions, we determine that one of the uracil anion resonances could be a Feshbach resonance [2] and we compare the dynamics of the dissociation of the uracil anion with the diazines.

[1] Adaniya et al. Review of Scientific Instruments 83 (2) 023106 (2012)

[2] Kawarai et al. The Journal of Physical Chemistry Letters 5 (21) 3854 (2014)

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