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Dissociative electron attachment to ring-containing compounds SYLWIA PTASINSKA, ZHOU LI, MICHAL RYSZKA, IAN CARMICHAEL, University of Notre Dame, NOTRE DAME RADIATION LABORATORY TEAM — In order to draw a comprehensive picture of gas-phase, low-energy electron interactions, with a particular focus on dissociative electron attachment (DEA), many model compounds have been investigated over several decades. The majority of these molecules studied possess a cyclic structure, consisting of 5- or 6-membered rings [1]. Therefore, an interesting question emerges: Is there any resemblance among the fragmentation patterns of such compounds and what factors drive the specific fragmentation reactions initiated by DEA? Recently, we studied DEA by comparing a more complex compound (i.e., nicotine). Nicotine is a bicyclic compound containing both 5- and 6-membered rings linked to each other as well as to its two individual compounds (i.e., pyridine and methyl-pyrrolidine) [2]. Nicotine was prone to complex dissociation pathways involving the cleavage of the pyrrolidine ring and isomerization mechanisms. Our results provide important new information about the stability of nicotine and its constituent parts that can further advance our understanding of other ring compounds. Currently, this study is under further systematic investigation for gas phase 5-membered rings (e.g., oxazole, iosoxazole, thiozole), in which positions of hetero atoms vary in their isomers. [1] Gorfinkiel, J.D., Ptasinska, S.; J. Phys B 50 (18), 182001, 2017; [2] Ryszka, M., Alizadeh, E., Li, Z., Ptasinska, S.; J. Chem. Phys. 147 (9), 094303, 2017; [3] Li, Z., Carmichael, I., S. Ptasinska, S.; Phys. Chem. Chem. Phys. 20 (27), 18271, 2018

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