Supplementary Information for: Fragmentation of Anthracene $C_{14}H_{10}$, Acridine $C_{13}H_9N$ and Phenazine $C_{12}H_8N_2$ ions in collisions with atoms†

M. H. Stockett,*[a] M. Gatchell,[a] J. D. Alexander,[a] U. Bērziņš,[b] T. Chen,[a] K. Farid,[a] A. Johansson,[a] K. Kulyk,[a] P. Rousseau[cd], K. Støchkel,[e] L. Adoui,[cd] P. Hvelplund,[e] B. A. Huber,[c] H. T. Schmidt,[a] H. Zettergren,[a] and H. Cederquist[a]

[0a] *Department of Physics, Stockholm University, Stockholm, SE-106 91, Sweden. E-mail: Mark.Stockett@fysik.su.se*

[0b] *Institute of Atomic Physics and Spectroscopy, University of Latvia, Riga, LV-1586, Latvia.*

[0c] *Centre de Recherche sur les Ions, les Matériaux et la Photonique (CIMAP), CEA-CNRS-ENSICAEN, F-14070 Caen Cedex 05, France.*

[0d] *Université de Caen Basse-Normandie, F-14032 Caen, France.*

[0e] *Department of Physics and Astronomy, Aarhus University, DK-8000 Aarhus C, Denmark.*

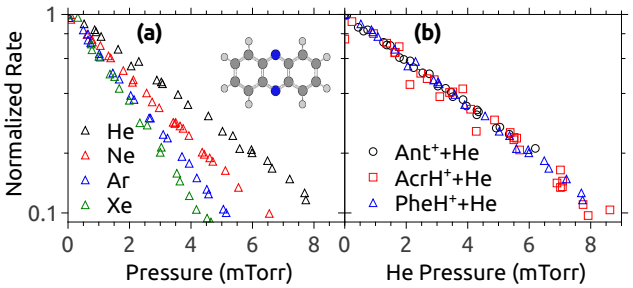

Figure S1: (a). Attenuation of $PheH^+$ beams in He, Ne, Ar, and Xe. (b). Attenuation of Ant^+, $ArcH^+$ and $PheH^+$ in He.

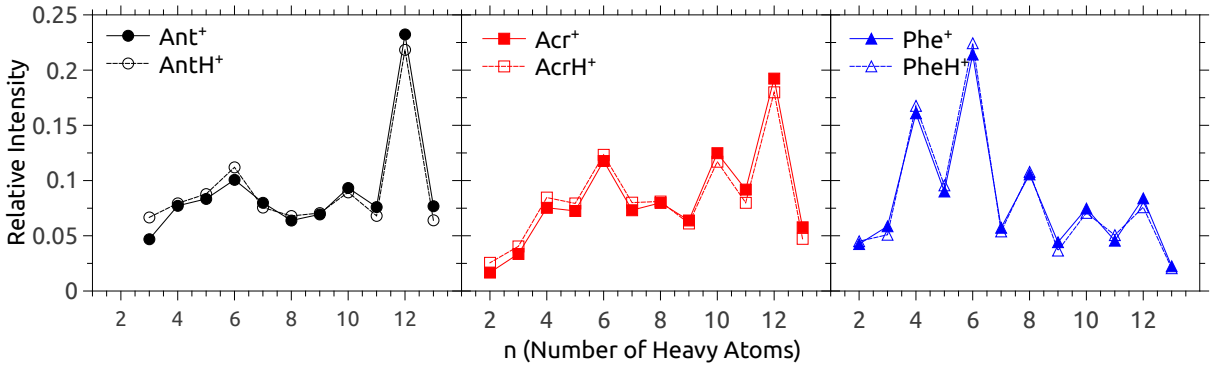

Figure S2: Integrated intensities of fragment group peaks, normalized to the sum of the intensities of all fragments, for ionized and protonated anthracene, acridine and phenazine colliding with He. Statistical errors are smaller than the data points. Lines between the data points are to guide the eye.

Examples of attenuation measurements for the case of protonated phenazine ($PheH^+$) colliding with He, Ne, Ar and Xe are shown in Figure S1 (a), while we show the attenuation measurements for all three molecules in He in Figure S1 (b).

In Figure S2 we compare the heavy-atom loss distributions for protonated and cationic anthracene, acridine and phenazine in collisions with He at 110 eV. The integrated intensities of the fragment peaks have been normalized such that their sums are unity. Due to the method of scanning used to obtain the experimental spectra, lighter fragments move across the detector in less time than heavier ones, diminishing their apparent intensity. This effect has been corrected for in the intensity distributions in Figure S2 (but not in the corresponding raw data in Figure 6 in the main article).