

Ammonia Elimination from Protonated Nucleobases

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ABSTRACT

Chapter 1: The dediazoniations of the diazonium ion **1** of 4-aminopyrimidine and of the tautomeric cytosinediazonium ions **2** and **3** are facile and result in the formations of cations **4**, **5**, and **6**. The pyrimidine ring-opening of **4**, **5** and **6** form their acyclic isomers **7** – **9**, respectively. The stability of (*E*)- and (*Z*)-isomers is studied.

Chapter 2: The results are discussed of mass-spectrometric studies of the nucleobases adenine **1h** (**1**, R = H), guanine **2h**, and cytosine **3h**. The protonated nucleobases are generated by electrospray ionization of adenosine **1r** (**1**, R = ribose), guanosine **2r**, and deoxycytidine **3d** (**3**, R = deoxyribose) and their fragmentations are studied with tandem mass spectrometry. Possible NH₃ elimination fragmentation paths for all the ions are given.

Chapter 3: The conformational and isomer preferences of cyanoamine **1** and carbodiimide **2**, their conjugate acids and the formation of isoguanosine are discussed. Possible NH₃ elimination paths from the protonated cyanoamine **1** and carbodiimide **2** are studied.