

RAMAN STUDY OF 6-AZACYTIDINE  
AND RELATED COMPOUNDS

*S. Garasevych*<sup>1</sup>, *M. Iakhnenko*<sup>1</sup>, *O. Slobodyanyuk*<sup>1</sup>,  
*I. Alexeeva*<sup>2</sup>, *L. Palchykowska*<sup>2</sup>, *A. Chernega*<sup>3</sup>,  
*Y. Vlasenko*<sup>3</sup>

<sup>1</sup>Faculty of Physics,  
Taras Shevchenko National University of Kyiv  
(64, Volodymyrska Str., Kyiv 01033, Ukraine;  
*e-mail: slobod@univ.kiev.ua*),

<sup>2</sup>Institute of Molecular Biology and Genetics,  
Nat. Acad. of Sci. of Ukraine  
(150, Zabolotnogo Str., Kyiv 03143, Ukraine),

<sup>3</sup>Institute of Organic Chemistry,  
Nat. Acad. of Sci. of Ukraine  
(5, Murmans'ka Str., Kyiv 02094, Ukraine)

S u m m a r y

Raman spectra of 6-azacytidine (6-azaC) in the microcrystalline state and in various solutions (H<sub>2</sub>O, D<sub>2</sub>O, and DMSO) are measured for the first time. On the basis of the comparison with the measured Raman spectra of related compounds such as microcrystals of cytidine, cytosine, 5-azacytidine, and 6-azacytosine and solutions of cytidine, the main spectroscopic feature of the substitution of a CH group in the 6<sup>th</sup> position of a pyrimidine base ring for an N atom is revealed as the absence of the low-frequency component of a characteristic doublet of cytidine in the region 1200–1300 cm<sup>-1</sup>. Blue shifts of some Raman peaks in D<sub>2</sub>O solutions of 6-azaC and cytidine are observed. Apparently, they may be connected with the transformation of intramolecular H-bonds into D-bonds. In addition, improved X-ray data for 6-azaC single crystals are obtained.