RESONANCE ENHANCED MULTI-PHOTON IONIZATION (REMPI) AND DOUBLE RESONANCE (UV-UV AND IR-UV) SPECTROSCOPIC INVESTIGATION ISOCYTOSINE

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Isocytosine(iC), 2-aminouracil, is a non-natural nucleobase and its functional group's positions resemble those of guanine; therefore, its spectroscopic investigation is worthy of attention especially for the natural/unnatural base pairs with guanine and isoguanine. In this study, resonance enhanced multi-photon ionization (REMPI) and UV/IR-UV double resonance spectra of iC in the gas phase are presented. The collaboration work between Tokyo Institute of Technology, Japan and Gyeongsang National University, Korea using laser ablation and thermal evaporation, respectively, for producing jet-cooled iC is presented and discussed. The REMPI spectrum of iC monomers is recorded in the spectral range of 35000 to 36400cm-1, showing very congested -* vibronic bands. UV-UV hole burning spectroscopy is further conducted to investigate the conformational landscapes of iC monomers. Moreover, the presence of free OH band from IR-UV double resonance spectroscopy in combination with quantum chemical calculations convinces that the iC monomer in free-jet expansion experiment is an enol tautomer. However, a possible presence of a keto tautomer of iC may be provided by employing a pico-second experiment on iC.