NEON MATRIX ISOLATION ESR (ELECTRON SPIN RESONANCE) STUDIES OF ION RADICALS GENERATED FROM THE NUCLEOBASE MOLECULES

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The nucleobase molecules (guanine, adenine, cytosine, and thymine) have been vaporized from a specially constructed quartz oven containing two heating stages. The lower temperature stage sublimes the nucleobases while the second stage is heated to a higher temperature to make certain that the matrix isolated molecules are monomeric. The two heating stages can be independently controlled over a wide temperature range. Ion radicals were generated from the nucleobase molecules by exposing them to the radiation and plasma emanating from an open-tube neon discharge lamp during matrix deposition. Attempts are being made to interpret the observed ESR spectra in order to gain electronic structure information for these fundamentally important radical ions.