Quantum chemical description of the ability to form peptide bonds

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One of the most popular areas of modern molecular science is the study of the electronic structure and reactivity of biologically active compounds by the modern method of quantum chemistry-the theory of density functional (DFT). The researches of Professor Jumber Kereselidze's in this area is are very successful and topical. In particular, a formula was constructed for the propensity of amino acids to form a peptide bond.

$$K_p = \frac{\Delta q \cdot R_{NH} \cdot R_{CO}}{P_{NH} \cdot P_{CO} \cdot \Delta E^{\#}}$$

Where Δq is the difference between the charges of carbon and nitrogen atoms of the peptide bond, R_{NH}, R_{CO} and P_{NH}, P_{CO} are the lengths and orders of NH and CO bonds. $\Delta E^{\#}$ is the activation energy for the formation of peptide bonds.
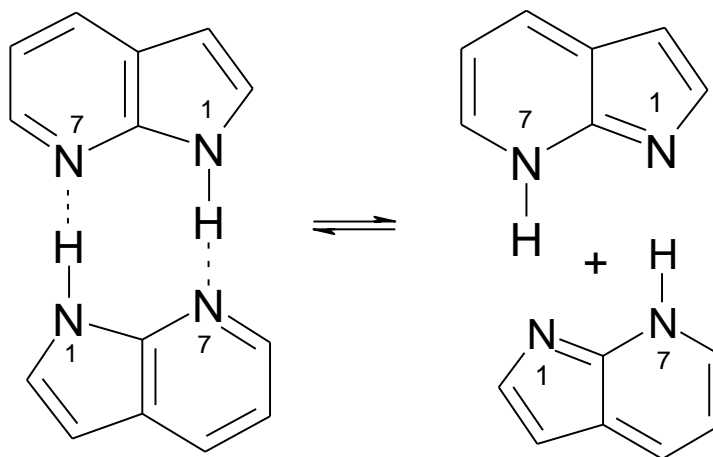
$$\nu = \frac{C}{\lambda} = C\bar{\nu} = 3 \cdot \frac{10^{10}\,cm}{sec}\,3300\,cm^{-1} = 10^{14}\,sec^{-1},$$

$$t = \frac{1}{\nu}\,10 \cdot 10^{-15}\,sec = 10\,femtosec$$