

The interactions of electrons with ions and ions with neutrals are among the most important processes in the chemical evolution of molecules, allowing us to gain a deeper understanding of chemical processes in low-temperature environments in space such as interstellar gas clouds and to obtain feedback for quantum-mechanical calculations. Various plasma parameters such as kinetic and rotational temperature of ions, their concentration, etc. can vary by several orders of magnitude and different diagnostic techniques are used to determine them. Diagnostics such as SA-CRDS and Cryo-CRDS were used in this work. The subject of the study were two molecular ions:  $\text{N}_2\text{H}^+$  and  $\text{N}_2^+$  from the temperature range of 80-350 K, where we examined their recombination and absorption rate coefficients utilizing the absorption line involving the most populated states.