

SPECTROSCOPIC STUDIES OF PROTONATED AMINES: CH_3NH_3^+ AND $\text{C}_2\text{H}_5\text{NH}_3^+$ ^a

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Mid-infrared spectra of protonated methylamine, CH_3NH_3^+ , and ethylamine, $\text{C}_2\text{H}_5\text{NH}_3^+$, have been recorded using the FELion ion trap connected to the Free Electron Laser for Infrared eXperiments (FELIX; Radboud University, Nijmegen, The Netherlands) employing infrared photodissociation of the corresponding neon-clusters. In addition, the pure rotational spectrum of CH_3NH_3^+ has been observed for the first time. Rotational transitions were observed in the frequency region between 80 and 240 GHz in the Coltrap apparatus using the method of state-selective He-attachment. In contrast to methylamine which features a complex CH_3 -internal-rotation/ NH_2 -inversion spectrum, its protonated variant CH_3NH_3^+ exhibits the spectrum of a simple symmetric rotor in its ground vibrational state.

^aThis contribution is dedicated to the memory of Li-Hong Xu.