

NH_4Cl and thus is of interest.^{38,41,49} Unfortunately, it is difficult to observe ν_4' in Raman scattering. In NH_4Cl , $\nu_4(\text{LO})$ and ν_4' peaks could not be resolved experimentally, and their positions were determined through intensity analysis of the polarization spectra. In NH_4Br , ν_4' is separated from $\nu_4(\text{LO})$; however, it is much weaker and broader than in the chloride and difficult to place accurately. At 1 bar and 296 K, ν_4' is located at $1447 \pm 8 \text{ cm}^{-1}$ in NH_4Cl . It is easier to observe ν_4' in the high pressure phase of NH_4Br V, although it moves towards lower wavenumber with increasing pressure and becomes a shoulder on $\nu_4(\text{LO})$. Typical values of ν_4' in NH_4Br are 1445 ± 20 (1 bar), 1430 (26 kbar) and 1425 (30 kbar, 296 K).

The present atmospheric pressure data on $\nu_4(\text{LO})$, $\nu_4(\text{TO})$ and on ν_4' are quite different from those recently published by Wang and Wright.⁵⁰⁻⁵¹ In NH_4Cl , the most likely cause for the absence of ν_4' in the published work appears to be that no attempt was made to separate $\nu_4(\text{LO})$ and ν_4' peaks from the broad shoulder. The use of a lower intensity laser (140 mW as compared to 1.5 W in the present work) might explain the absence of details in Wang and Wright's work on NH_4Br . ν_4' which is characterized by α_{xy} polarization does not appear to arise from splitting of the degenerate $\nu_4(\text{T})$ since the latter is present with polarization expected for F_2 symmetry. ν_4' is thus assigned as a zone edge excitation of ν_4 in a manner similar to several of the lattice phonons with the point X in the Brillouin zone of the cubic lattice being a very likely position.^{7,34,52-53}

The results presented in this work represent observations of more than one thousand Raman bands of many different samples and in different high pressure cells. There are no conflicts in the direction of the wavenumber shifts with pressure from those reported in the preliminary work on NH_4Cl ;²⁵ however, there