

Fig. 4. Shift of the librational frequency (cm^{-1}) of NH_4Cl with increasing pressure at 296 K. The values obtained from one-phonon spectra are indicated by the light circles (O) while those obtained from two-phonon spectra are shown by the dark circles (●). The "order-disorder" phase transition occurs at 9-10 kbar.

Fig. 5. Shift of the internal mode frequencies of the NH_4^+ ion in NH_4Cl and NH_4Br with change in nitrogen-halogen distance, $d_{\text{N-X}}$, at 296 K. For the symmetric, hydrogen-stretching mode, ν_1 , only the wavenumber observed at 1 bar is indicated.

Fig. 6. Variation of the librational frequency (cm^{-1}) of NH_4Cl and NH_4Br with lattice constant a_0 . In NH_4Cl , values from both one-phonon (light circles, O) and two-phonon (dark circles, ●) spectra are shown, while those in NH_4Br were all obtained from two-phonon excitation process.

Fig. 7. Pressure induced frequency variation of the combination bands in NH_4Cl and NH_4Br at 296 K. Curves designated as A, B and C represent combination bands: $\nu_2 + \nu_6$, $\nu_4 + \nu_6$ and $\nu_4 - \nu_6$ respectively.

Fig. 8. Peaks centered around ν_3 (3150 cm^{-1} at 1 atm) in NH_4Cl are shown at 5.9 and 22.7 kbar pressure for unpolarized light. Polarization studies at atmospheric pressure show the presence of five peaks with α_{xz} and one with $\alpha_{xx}(\nu_1)$ polarization. These peaks could not be resolved in the high pressure spectra.

Fig. 9. Effect of isothermal (296 K) and isobaric (1 atm) "disorder-order" phase transition on the relative Raman intensity of $\nu_4(\text{TO})$ and $\nu_4(\text{LO})$ component in NH_4Cl .