

Table I. The Fundamental Modes of the NH_4^+ Ion in NH_4Cl and NH_4Br
at 296 K

NH_4Cl			NH_4Br			
$\nu \text{ cm}^{-1}$ (1 atm)	γ_i (b)	A_i (c)	$\nu \text{ cm}^{-1}$ (1 atm)	γ_i	A_i	Assignment (d)
3055 ± 8			3055 ± 8	(negative)	(negative)	$\nu_1(A_1) (\alpha_{xx})$
1710 ± 2	$+0.026 \pm .004$	$+0.078$	1690 ± 2	$+0.022 \pm .003$	$+0.066$	$\nu_2(E) (\alpha_{xx})$
3150 ± 5 (a)	$-0.043 \pm .006$	-0.13	3135 ± 3 (a)	$-0.036 \pm .003$	-0.11	$\nu_3(F_2) (\alpha_{xy})$
1404 ± 3 (a)	$-0.047 \pm .006$	-0.14	1402 ± 3 (a)	$-0.044 \pm .003$	-0.13	$\nu_4(\text{TO}) \left. \begin{array}{l} (\alpha_{xy}) \\ (F_2) \end{array} \right\}$
1430 ± 5 (a)	$-0.058 \pm .008$	-0.17	1426 ± 5 (a)	$-0.065 \pm .01$	-0.20	$\nu_4(\text{LO}) \left. \begin{array}{l} (\alpha_{xy}) \\ (F_2) \end{array} \right\}$

(a) Frequencies which were calculated from fitting the Raman intensity to uncoupled damped oscillators.

(b) $\gamma_i = -\frac{d \ln \nu_i}{d \ln V}$ (mode Grüneisen constant)

(c) $A_i = -\frac{d \ln \nu_i}{d \ln d_{\text{N-X}}}$ (where $d_{\text{N-X}}$ is nitrogen-halogen distance)

(d) α_{ij} Raman tensor