

Table III. Wavenumber for the librational (ν_6) and Internal modes ($\nu_1 - \nu_4$) of the NH_4^+ Ion in Various Ammonium Salts (300 K; 1 atm)

Crystal	Crystal Symmetry	Distance (Å)	Barrier Height, V_0 (kcal mole ⁻¹)	ν_6	ν_1	ν_2	ν_3	ν_4 (cm ⁻¹)	References
<u>FLUORIDE</u>									
		<u>dN-F</u>							
NH_4F	hex., C_{6V}^6 or C_{6V}^4	2.71	~10	555-568	2845	1750	3100	1408	15, 64-72
$(\text{NH}_4)_2\text{SiF}_6$	Cubic, O_h^5	3.00	~2	168	3233	1701	3314	1427	68, 73-76
$(\text{NH}_4)_2\text{BeF}_4$	Rhomb., V_h^{16}	2.86- 3.39	1.5, 2.7, 4.3		3247	1686 ⁺	3334	1431	15, 77, 81
NH_4PF_6	Cubic, O_h^5		0.2 (103K)		3252		3335	1433	15, 68, 82
<u>CHLORIDE</u>									
		<u>dN-Cl</u>							10, 18, 38, 57
NH_4Cl	Cubic, O_h^1	3.35	4.7	350	3055	1710	3150	1404(TO)	83-84
$(\text{NH}_4)_2\text{SnCl}_6$	Cubic, O_h^5	3.55	1.2		3162	1670	3245	1407	76-77, 85
$(\text{NH}_4)_2\text{PtCl}_6$	Cubic, O_h^5	3.48					3240		68, 86
<u>BROMIDE</u>									
		<u>dN-Br</u>							10, 18, 38, 57, 83
NH_4Br	Cubic, O_h^1	3.52	3.3, 4.0	310	3055	1690	3135	1402(TO)	87