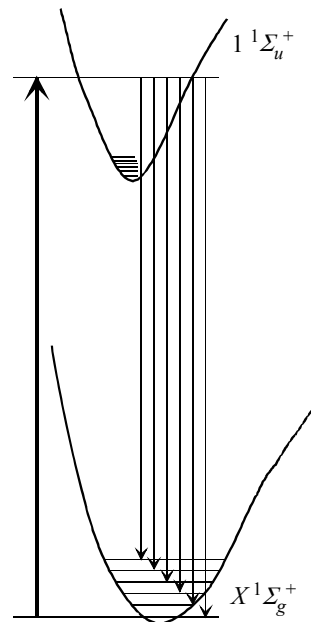
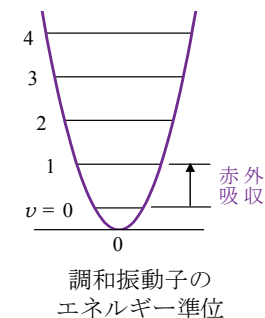
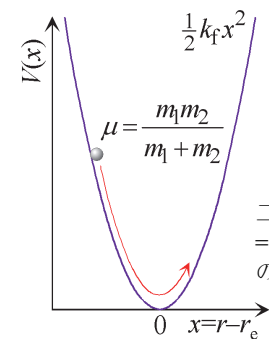
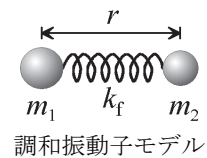


3.1

Cl₂ 励起状態の発光スペクトル

出典: J. Wörmer *et al.*, *Z. Phys.* **D7**, 383 (1988).



3.3

二原子分子の赤外吸収 cm^{-1} (μm)

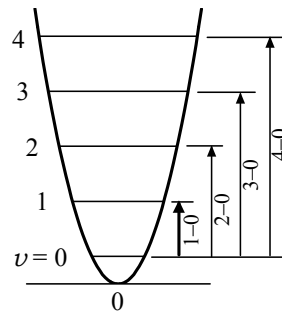
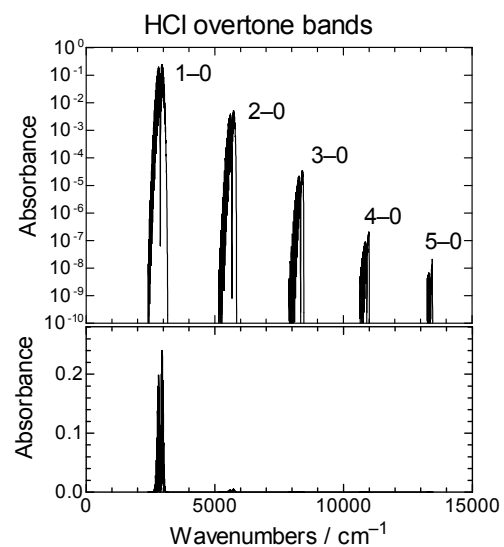
HCl	2886 (3.47)
NO	1876 (5.33)
CO	2143 (4.67)

ばね定数 k_f と結合次数 n , 結合解離エネルギー D

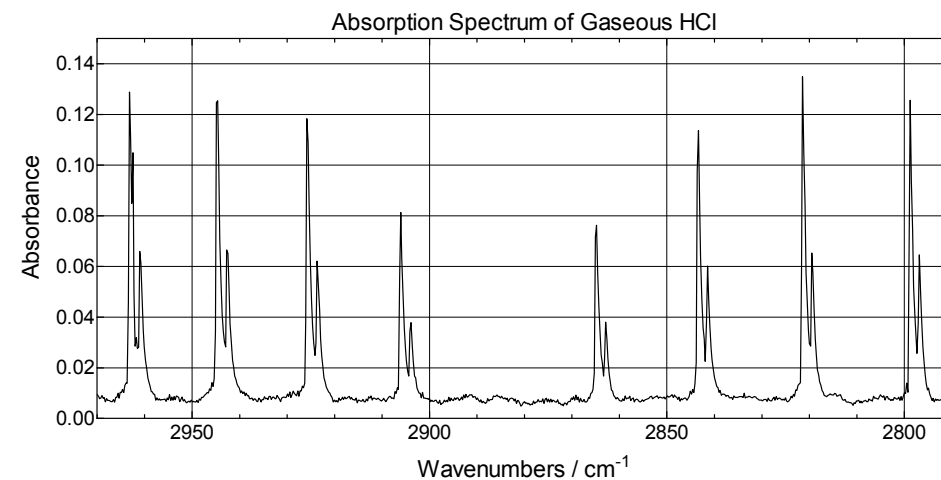
	$k_f / \text{N m}^{-1}$	n	$D / \text{kJ mol}^{-1}$
HBr	384	1	366
Cl ₂	318	1	243
O ₂	1139	2	498
NO	1548	2.5	632
CO	1855	3	1076
N ₂	2241	3	945

3.2

HCl の倍音バンド

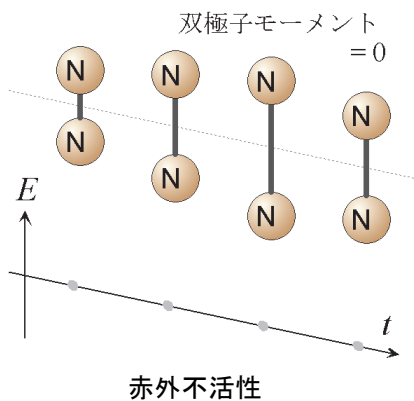
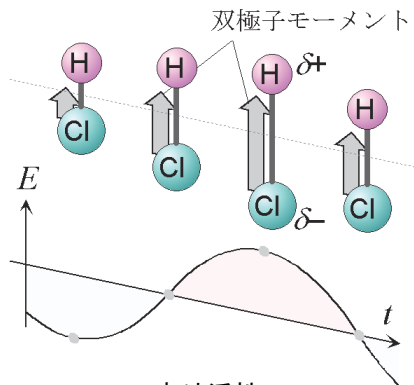


3.4

H³⁵Cl と H³⁷Cl の赤外吸収スペクトル

4.1 赤外(光学)遷移の古典的解釈

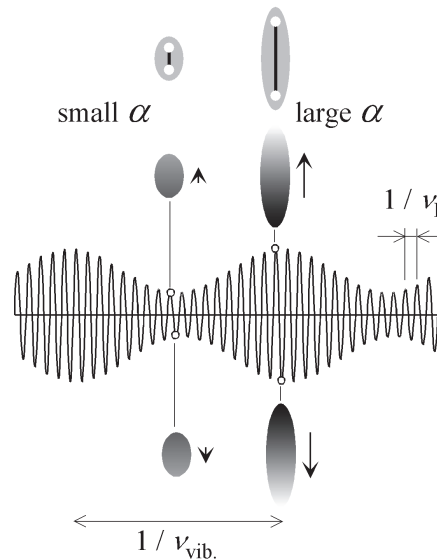
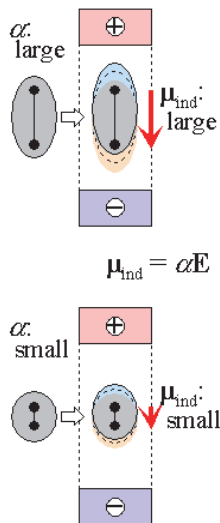
赤外(光学)遷移
= 双極子による遷移



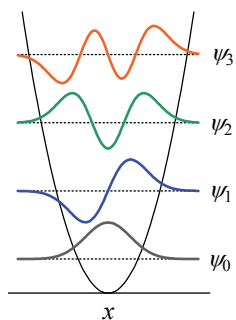
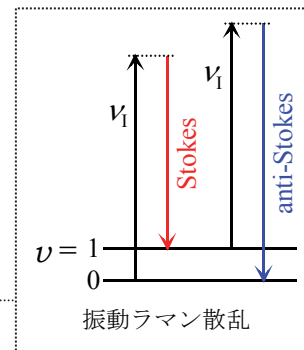
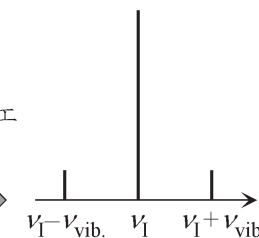
4.2 ラマン散乱の古典的解釈

ラマン散乱 = 分極率による遷移

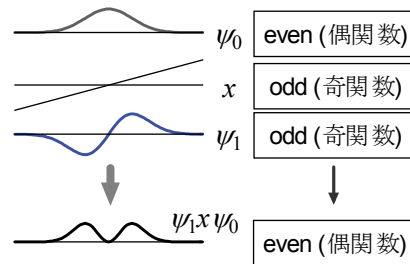
分極率



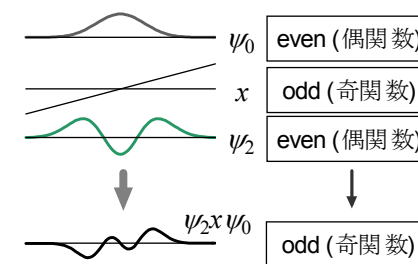
フーリエ変換



振動波動関数 (調和振動子)



(a) 許容遷移 ($\nu = 1 \leftrightarrow 0$)



(b) 禁制遷移 ($\nu = 2 \leftrightarrow 0$)