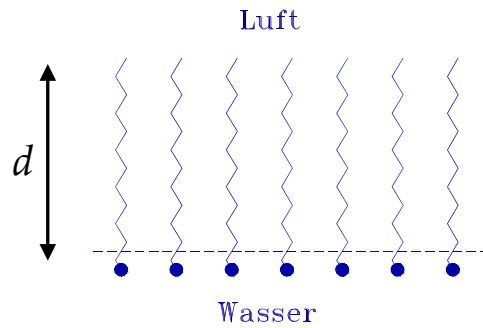


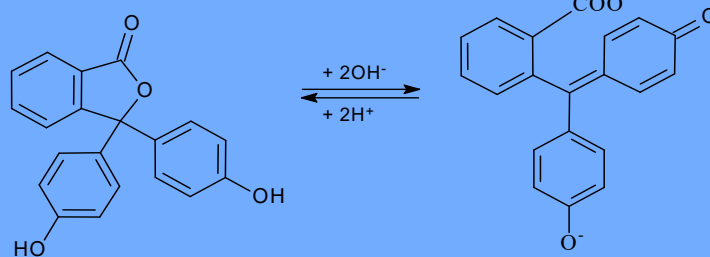
Länge d und Flächenbedarf F_S von Stearinsäure

$$d = \frac{m}{\rho F_G}$$

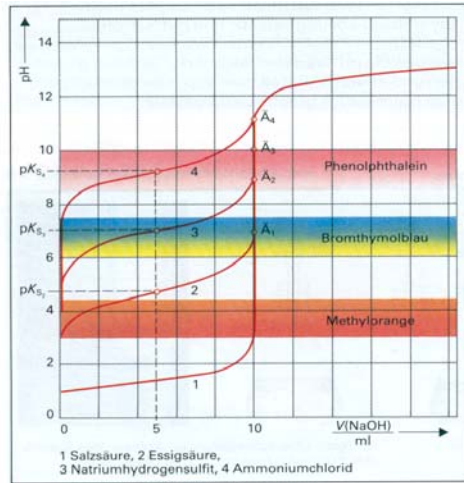
$$F_S = \frac{F_G M}{m N_A}$$



Phenolphthalein (farbloses Lacton)

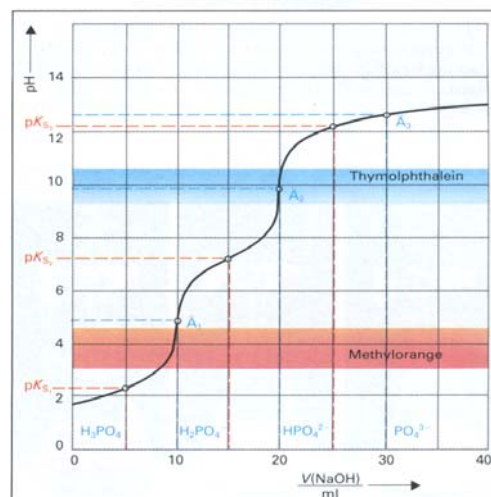


Titration curves



- 1 Salzsäure
- 2 Essigsäure
- 3 Natriumhydrogensulfid
- 4 Ammoniumchlorid

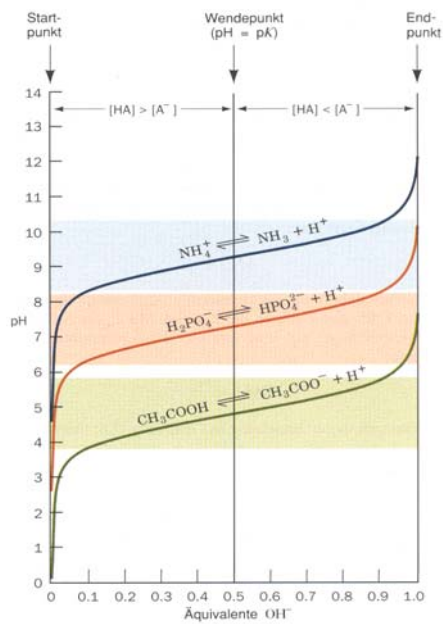
Titration curve for H₃PO₄



Farben und Umschlagbereiche einiger Indikatoren

Indikator	Umschlagbereich pH	Farbe der Indikatorsäure	Farbe der Indikatorbase
Thymolblau	1,2-2,8	rot	gelb
Methylorange	3,1-4,4	rot	gelb-orange
Kongorot	3,0-5,2	blau	rot
Methylrot	4,4-6,2	rot	gelb
Lackmus	5,0-8,0	rot	blau
Phenolphthalein	8,0-9,8	farblos	rot-violett
Thymolphthalein	9,3-10,6	farblos	blau

Pufferungskurven



Kapitel 7

Flüssigkeiten
Flüssige Mischungen
Lösungen

Wechselwirkungen zwischen Molekülen und Ionen

- Wasserstoffbrückenbindungen
- Coulombkräfte
- Ion-Dipol-Kräfte
- Dipol-Dipol-Kräfte
- Dispersionskräfte

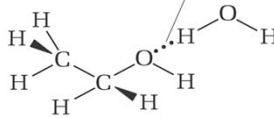
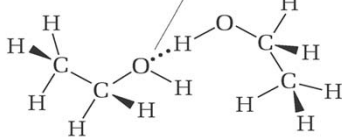
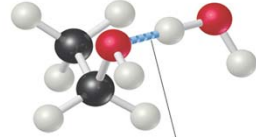
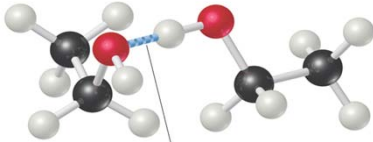
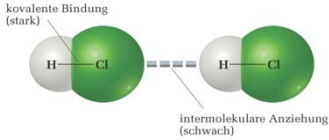


Nur wenn Ionen
Vorhanden sind.



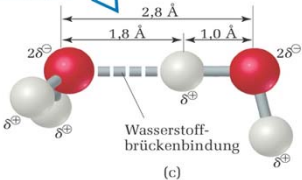
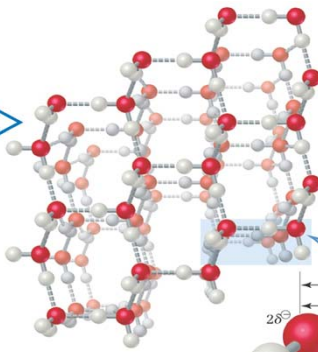
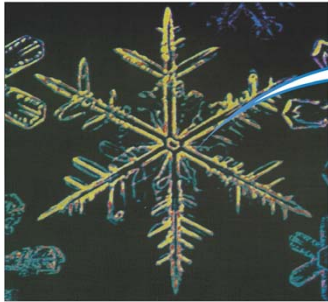
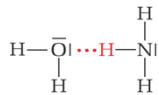
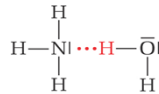
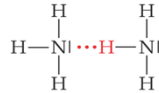
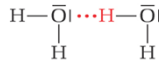
Abnehmende Stärke der Kraft

Wasserstoffbrücken



(a)

(b)

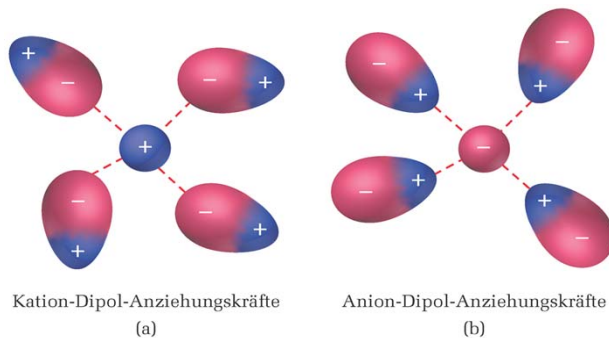


Coulombkräfte

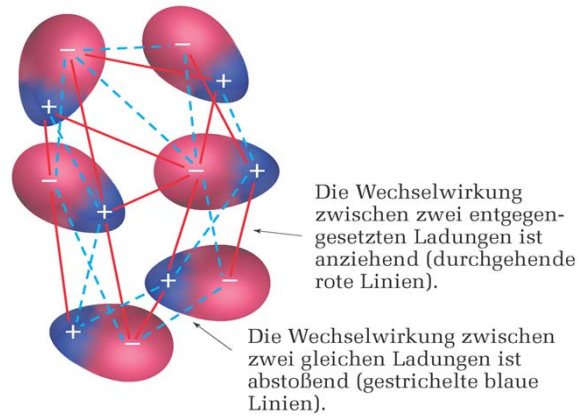
- Kräfte zwischen Ionen
- Attraktiv bei entgegengesetzten Ladungen
- Repulsiv bei gleichpoligen Ladungen
- Weitreichend: sinken mit $1/r^2$

$$F_C = \frac{1}{4\pi\epsilon_0} \cdot \frac{q_+ \cdot q_-}{r^2}$$

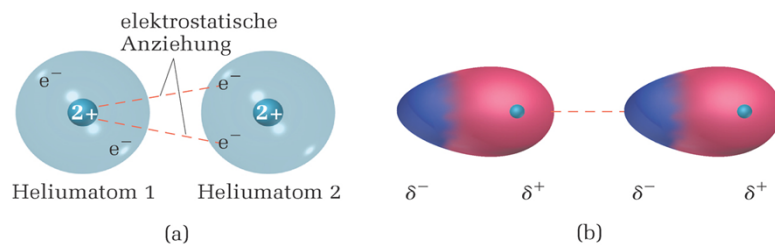
Ion-Dipol-Kräfte



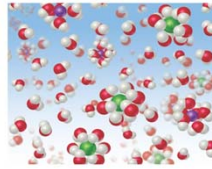
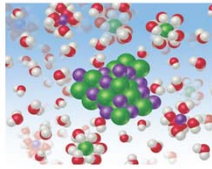
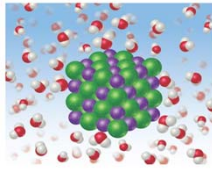
Dipol-Dipol-Kräfte



Dispersionskräfte (van der Waals-, London-)



Lösen von Salzen



- Gitterenergie des Salzes muss überwunden werden
- Hydratationsenergie wird frei, wenn sich Wassermoleküle an die Ionen anlagern
- Gesamtprozess kann endotherm oder exotherm sein

