

# KONDUKTOMETRIJA

Merjenje prevodnosti elektrolitov

# Elektroliti

- Močni
- Šibki

# Gibanje ionov

- V raztopini so ioni nosilci električnega toka.
- Velja Ohmov zakon:  $U = RI$
- Kationi se gibljejo k negativno nabiti elektrodi
- Anioni pa k pozitivno nabiti elektrodi

# Hitrost gibanja ionov

- Odvisna od jakosti električnega polja ( $\text{Vm}^{-1}$ )
- Naboja na ionu
- Velikosti iona v raztopini
- Viskoznosti raztopine
- Temperature

Hitrost ionov v električnem polju imenujemo MOBILNOST

# Prevodnost raztopin:

Ohmov zakon:

$$I = \frac{U}{R}$$

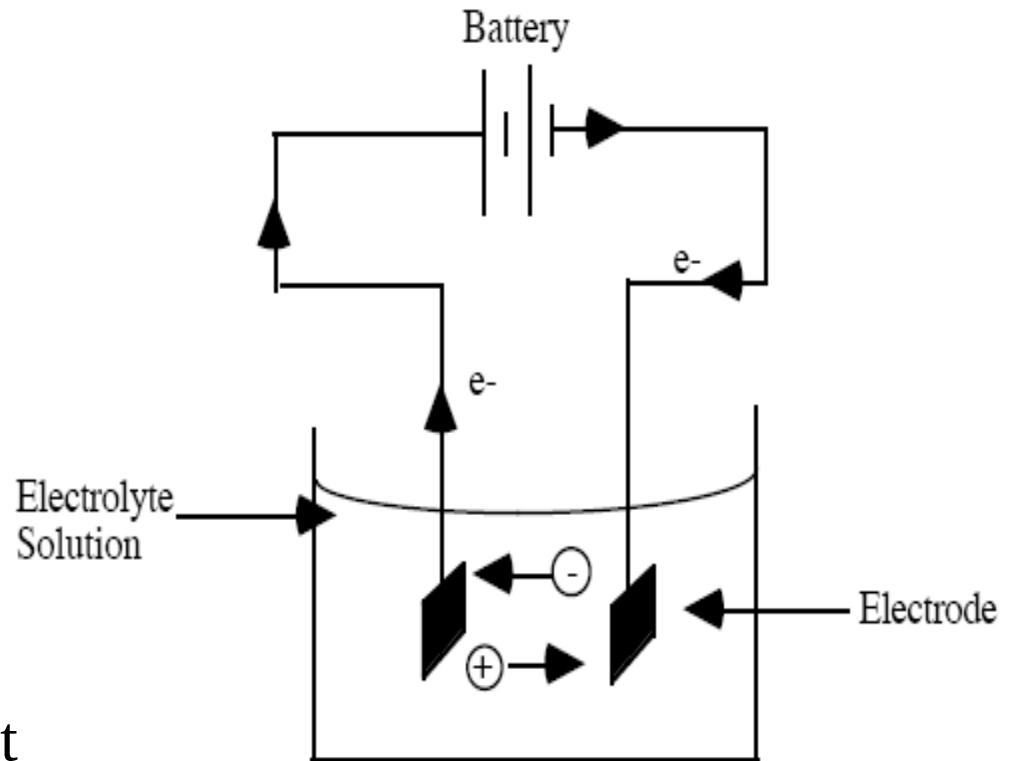
$$R \propto \frac{L}{A}$$

$$R = \rho \left( \frac{L}{A} \right)$$

$$\frac{1}{R} = \frac{1}{\rho} \left( \frac{A}{L} \right) = \kappa \left( \frac{A}{L} \right)$$

Specifična upornost

Specifična prevodnost



- Za formule in račune glej skripta za LABORATORIJSKE VAJE IZ KEMIJE in sicer vajo ELEKTROLITSKA PREVODNOST RAZTOPIN (str. 86-89, za izdajo 1998)
- Računski primeri iz skript Zbirka nalog iz splošne kemije

# Molska prevodnost

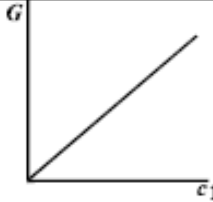

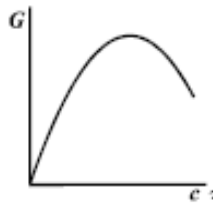
$$\forall \Lambda_m = \kappa/c \quad \text{enote: } \Omega^{-1} \text{ m}^2 \text{ mol}^{-1}$$

- Onsagerjeva enačba:

$$\Lambda_m = \Lambda_m^\circ - k(c)^{1/2}$$

Pri šibkih elektrolitih, je koncentracija ionov odvisna od stopnje disociacije ionov:

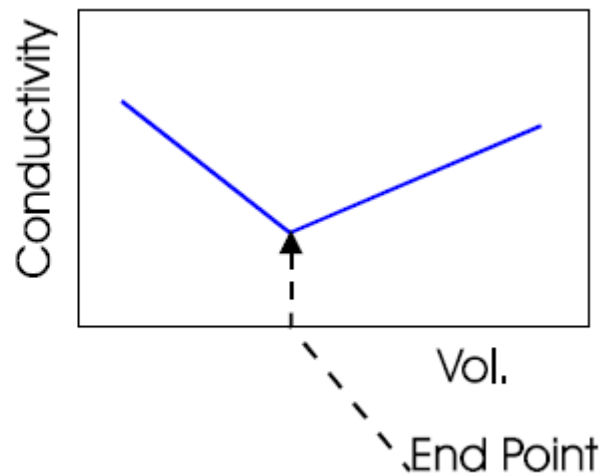
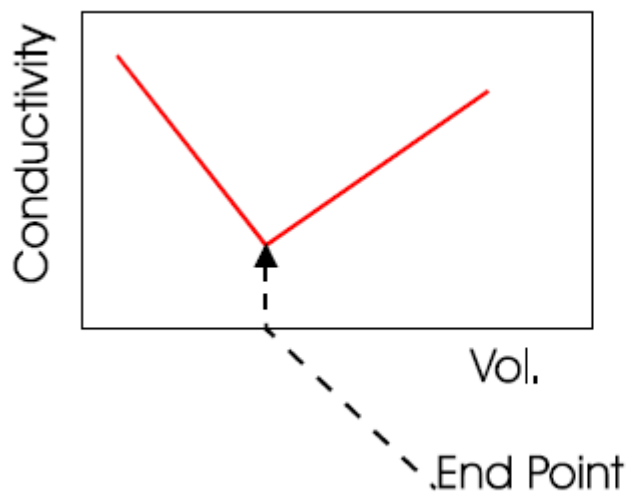
$$K = c\alpha^2/(1-\alpha) \quad \text{in} \quad \Lambda_m = \alpha\Lambda_m^\circ$$

Recommended Name of Technique	Excitation Signal	Independent Variable	Measured Response	Typical Response Curve	Remarks
Conductometry	Alternating voltage; frequency $f < \text{ca. } 0.1 \text{ MHz}$	Concentration $c$	Conductance $G = f(c)$		A measure of the ability of a solution to carry an electric current. For a conductor of a geometrical area of cross-section $A$ (SI base units $\text{m}^2$ ) and length $l$ (SI base units $\text{m}$ ),  $1/R = G = k(A/l)$  where $R$ is the resistance (SI base units ohms, $\Omega$ ), $L$ the conductance (siemens, $\text{S} = \Omega^{-1}$ ) and $k$ the conductivity ( $\text{S m}^{-1}$ ).
Conductometric titration	As for conductometry	Volume $V$ (or otherwise measured amount) of a reagent	Conductance $G = f(V)$		
High frequency conductometry	Alternating voltage; frequency $f > \text{ca. } 0.1 \text{ MHz}$	Concentration $c$	Conductance $G = f(c)$ , susceptance $B = f(c)$ , admittance $Y = f(c)$		The recommended term is inexact when $B$ or $Y$ is measured, but names like "susceptometry" cannot be encouraged.
High frequency conductometric titration	As for high frequency conductometry	Volume $V$ (or otherwise measured amount) of a reagent			



# Konduktometrične titracije

Šibka kislina-močna baza



močna kisline - močna baza

