

Quiz 16.2 – Ion Transport

Name: _____

Conductive Materials

A wire sample made of an unknown metal has a length of $2.5m$ and a cross-sectional area of $0.080cm^2$. The resistance of this wire sample is measured to be 12Ω . What is the conductivity (κ) of the unknown metal?

An outdoor grounding wire must be designed to safely carry a very high current, as from a lightning strike. Copper wire has conductivity of $5.8 \times 10^7 \frac{1}{\Omega m}$. Find the resistance of a wire made from pure copper, with $l = 25m$ and $A = 0.22cm^2$

Electrolyte Conductivity

In water at $298K$, Ca^{2+} has an ion mobility of $u = 6.17 \times 10^8 \frac{m^2}{Vs}$ and Br^- has an ion mobility of $u = 8.09 \times 10^8 \frac{m^2}{Vs}$. Use the viscosity of water ($0.0089 \frac{kg}{m s}$) to find the Stokes radius of each ion

Find the molar conductivity of a solution of $CaBr_2$

Two electrodes with $A = 6.0cm^2$ are placed $1.5cm$ apart in a $0.75 M$ $CaBr_2$ solution. Find the resistance across the electrolyte solution

If $120V$ are placed across the electrodes, how long does it take a Ca^{2+} ion to traverse from one electrode to the other?

Because I Could Not Stop for Death (479)

By Emily Dickinson

Because I could not stop for Death –
He kindly stopped for me –
The Carriage held but just Ourselves –
And Immortality.

We slowly drove – He knew no haste
And I had put away
My labor and my leisure too,
For His Civility –

We passed the School, where Children strove
At Recess – in the Ring –
We passed the Fields of Gazing Grain –
We passed the Setting Sun –

Or rather – He passed Us –
The Dews drew quivering and Chill –
For only Gossamer, my Gown –
My Tippet – only Tulle –

We paused before a House that seemed
A Swelling of the Ground –
The Roof was scarcely visible –
The Cornice – in the Ground –

Since then – 'tis Centuries – and yet
Feels shorter than the Day
I first surmised the Horses' Heads
Were toward Eternity –