

Conductivity of Ionic Solutions

Spoken Tutorial Project

<http://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in>

Madhuri & Kaushik

IIT Bombay

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Learning Objectives

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- **Measure Conductivity**



Learning Objectives

- **Measure Conductivity**
- **Calculate the resistance of ionic solutions**



System Requirement

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- **ExpEYES v 3.1.0**



System Requirement

- **ExpEYES v 3.1.0**
- **Ubuntu Linux OS v 14.04**



Pre-requisites

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- **ExpEYES Junior interface**



Pre-requisites

- **ExpEYES Junior** interface
- For relevant tutorials, visit our website
www.spoken-tutorial.org



Conductivity

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Conductivity

Conductivity

- of a solution is a measure of its ability to conduct electricity



Conductivity

Conductivity

- of a solution is a measure of its ability to conduct electricity
- of water is directly related to the concentration of ions dissolved in it



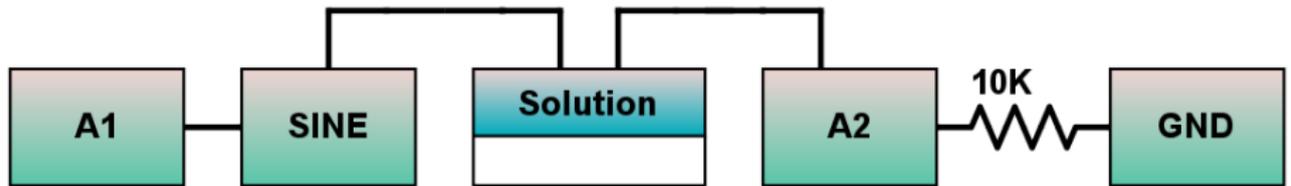
Conductivity

Conductivity

- **Demonstrate conductivity of tap water**



Conductivity



Conductivity

Conductivity

- **Measure conductivity of copper sulphate solution**



Conductivity

- **Measure conductivity of copper sulphate solution**
- **One spatula of copper sulphate is dissolved in 100ml of water**



Conductivity

Conductivity

- **Measure conductivity of dilute sulphuric acid solution**



Conductivity

- Measure conductivity of dilute sulphuric acid solution
- A few drops of dilute sulphuric acid are added to water



Conductivity

Conductivity

- **Measure conductivity of dilute Potassium hydroxide solution**



Conductivity

- Measure conductivity of dilute Potassium hydroxide solution
- A few drops of dilute Potassium hydroxide solution are added to water



Conductivity

$$V_{sol} = V_{total} - V_{10K}, \quad I = V_{10K} / 1000, \quad R_{sol} = V_{sol} / I$$

<i>Soln</i>	V_{total}	V_{10K}	V_{sol}	$I(mA)$	$R_{sol}(K\Omega)$
H_2O	3.54	2.00	1.54	0.2	7.7
$CuSO_4$	3.54	3.16	0.38	0.316	1.2
H_2SO_4	3.54	3.48	0.06	0.348	0.17
KOH	3.54	3.49	0.05	0.349	0.14



Summary

- **Measure Conductivity and**
- **Calculate the resistance of ionic solutions**



Assignment

- 1 Sodium hydroxide, Acetic acid & Sodium chloride solutions
- 2 Measure conductivity
- 3 Calculate resistance of ionic solutions



About the Spoken Tutorial Project

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Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- Conducts workshops using spoken tutorials
- Gives certificates to those who pass an online test
- For more details, please write to contact@spoken-tutorial.org



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- More information on this Mission is available at <http://spoken-tutorial.org/NMEICT-Intro>

