



YOUTUBE CLASS LECTURES DURING PANDEMIC
by Principal Mushtaq K. Shaikh, Associate Professor in Chemistry

https://youtu.be/68nRk-ieUI8?si=BAO8F_k5xrACwnwz

EMF-Nernst Equation

• TYPES OF ELECTRODES:

- **1> Metal-metal ion electrode**
 $\text{Zn(s)} | \text{Zn}^{2+}$
- **2> Gas electrode** $\text{Pt} | \text{H}_2(\text{g}), \text{HCl}$
- **3> Amalgam** $\text{Pt}, \text{Pb(Hg)}, \text{Pb}^{2+}$
- **4> Metal-metal insoluble salt electrode** $\text{Ag}, \text{AgCl(s)}, \text{Cl}^-$
- **5> Oxidation-Reduction electrode**
 $\text{Pt}, \text{Fe}^{2+}, \text{Fe}^{3+}$

0:38 / 36:43

EMF-Nernst Equation

$$E = E^\circ - \frac{2.303 RT}{nF} \log \frac{[C][D]}{[A][B]}$$

By substituting the values of

$$R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$$
$$T = 25^\circ\text{C} = 25 + 273 = 298 \text{ K.}$$
$$F = 96500 \text{ coulombs}$$

We have,

$$E = E^\circ - \frac{2.303 \times 8.314 \times 298}{96500 \times n} \log \frac{[C][D]}{[A][B]}$$
$$\text{OR } E = E^\circ - \frac{0.0591}{n} \log \frac{[C][D]}{[A][B]}$$

13:09 / 36:43



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Types of Reversible Electrodes

* In a gas electrode hydrogen gas is continuously bubbled through a 1M solution of the acid. A inert metal like platinum is used, since it is not attacked by acid. The inert metal in electrode does not participate in the electrode reaction but helps in making electrical contact. Let the gas bubbled be X_2 , then the electrode is denoted as

$$Pt, X_2(1atm) / X^+(1M)$$

Example:
Standard hydrogen electrode: $Pt, H_2(1atm) / H^+(1M)$

Pure Hydrogen at 1 atmosphere



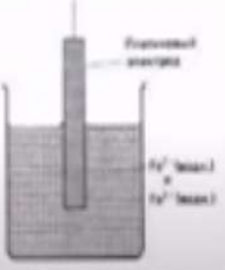
15:41 / 33:35

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Types of Reversible Electrodes

• Oxidation- Reduction electrode

Redox electrodes
Pt | ox, red

$$Fe^{3+} + e^- \leftrightarrow Fe^{2+}$$


Pt | Fe^{3+}, Fe^{2+}

27:02 / 33:35



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Bimolecular Acid Hydrolysis of an Ester

To exit full screen, press **Esc**

BIMOLECULAR HYDROLYSIS OF AN ESTER ($A_{AC}2$)

0:17 / 33:24

Scroll for details

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Bimolecular Acid Hydrolysis of an Ester

TAUTOMERISM

- ✓ It is defined as the phenomenon in which two isomeric forms having different functional groups are spontaneously inter convertible and can exist in dynamic equilibrium.
- ✓ The two forms in tautomeric equilibrium are called tautomers of each other.
- ✓ Eg: Keto-enol tautomerism

$$\begin{array}{ccc} \text{O} & \text{H} & \text{OH} \\ || & | & | \\ -\text{C}-\text{C}- & \rightleftharpoons & -\text{C}=\text{C}- \\ | & & | \end{array}$$

(Keto form) (enol form)

14:23 / 33:24

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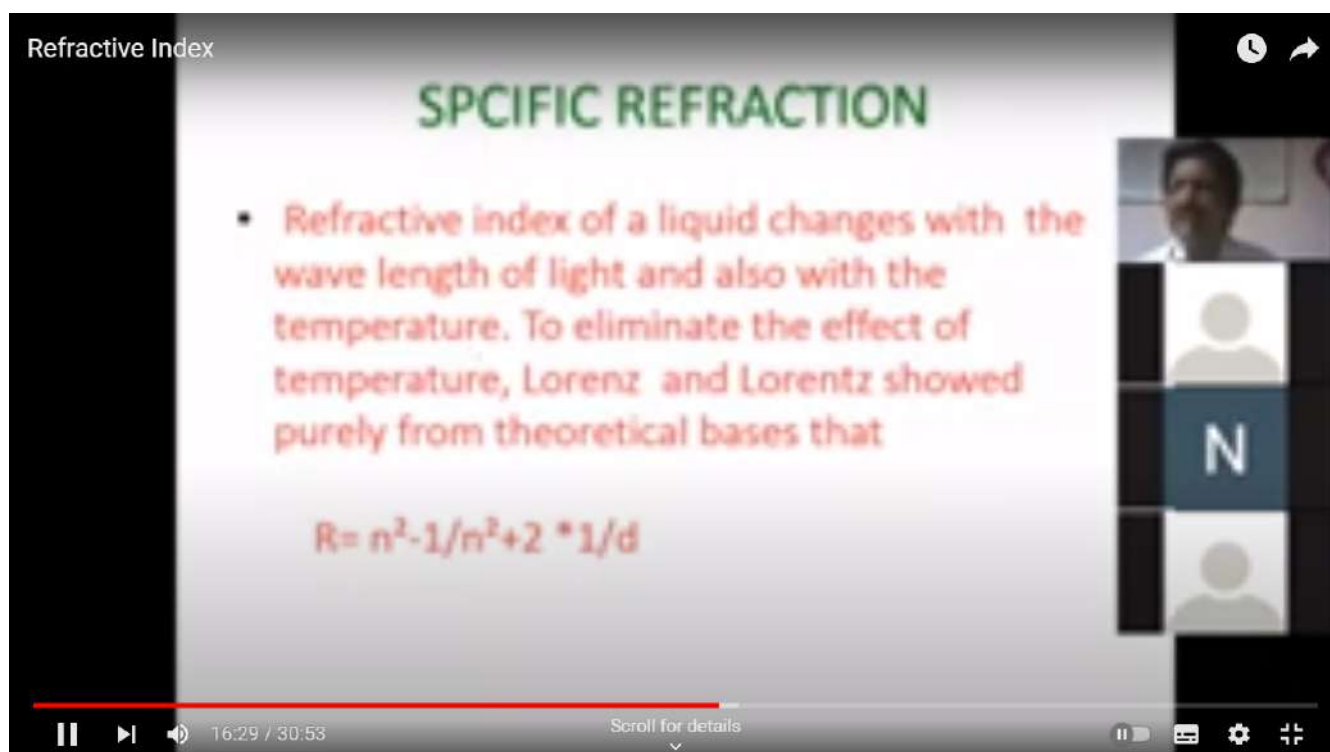


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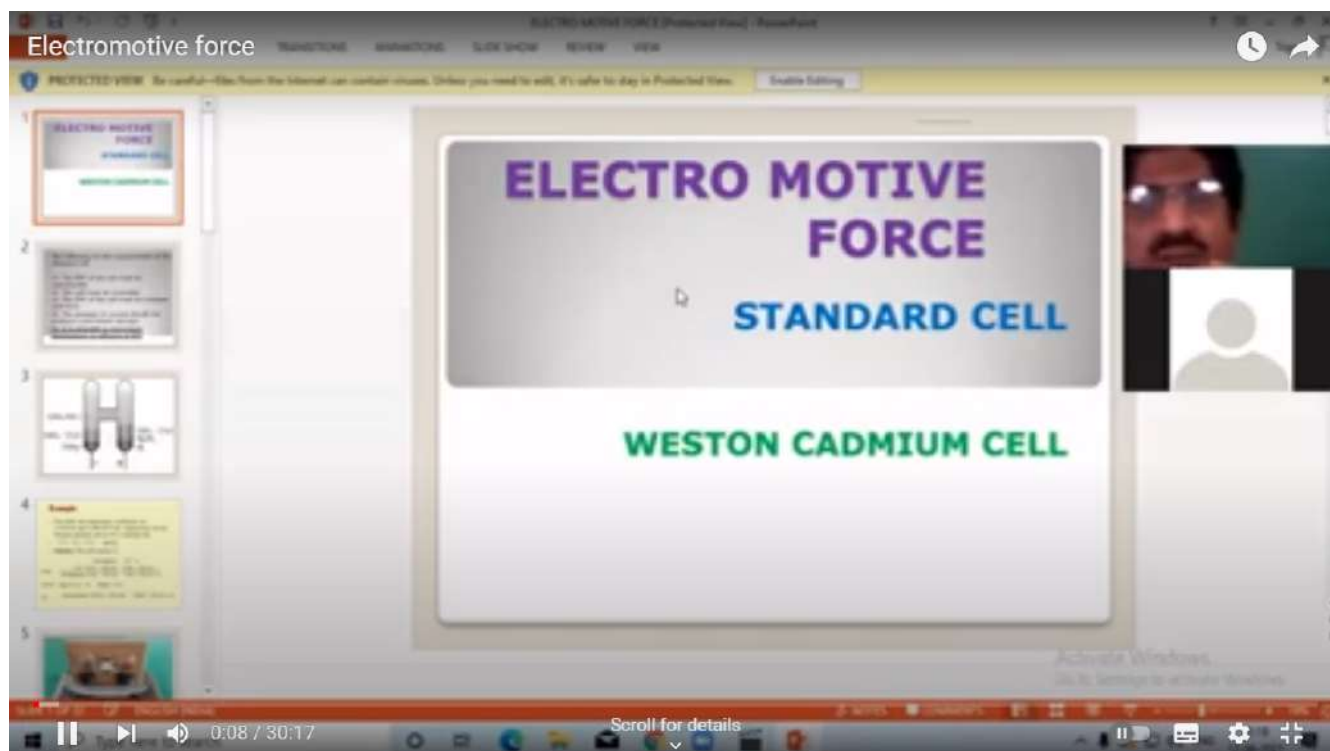
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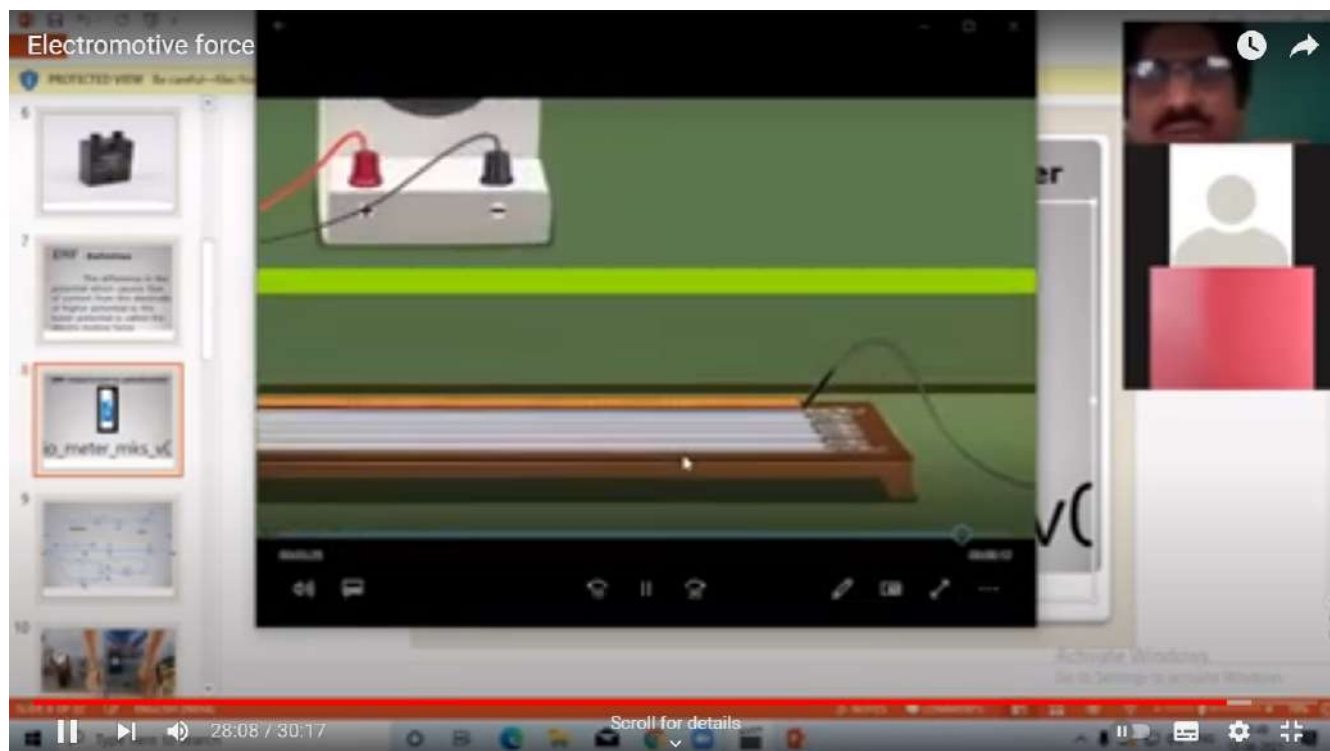


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Carboxylic Acids and Their Derivatives

CARBOXYLIC ACIDS & THEIR DERIVATIVES

UNIT-2

CHAPTER-6

0:08 / 23:22

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Carboxylic Acids and Their Derivatives

Classification

- C.A containing 1,2 & 3 carboxyl groups are known as mono, di & tri C.A respectively.
- These may be aliphatic, alicyclic & aromatic.
- These may further subdivided into saturated, unsaturated & substituted C.A.
- Some representative members are given below.

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Parachor and its Applications

Density of benzene at 20°C, (D)
= 0.878 g/ml

Surface tension of benzene at 20°C, (γ)
= 29.3 dynes/cm

Molecular weight of benzene (C₆H₆)
= 78

∴ Experimental value of parachor, (P)

$$= \frac{M \gamma^{1/4}}{D} = \frac{78 \times (29.3)^{1/4}}{0.878} = 286.7$$

Thus the experimental value is in close agreement with the calculated value. Hence Kekulé's structure is confirmed.

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Parachor and its Applications

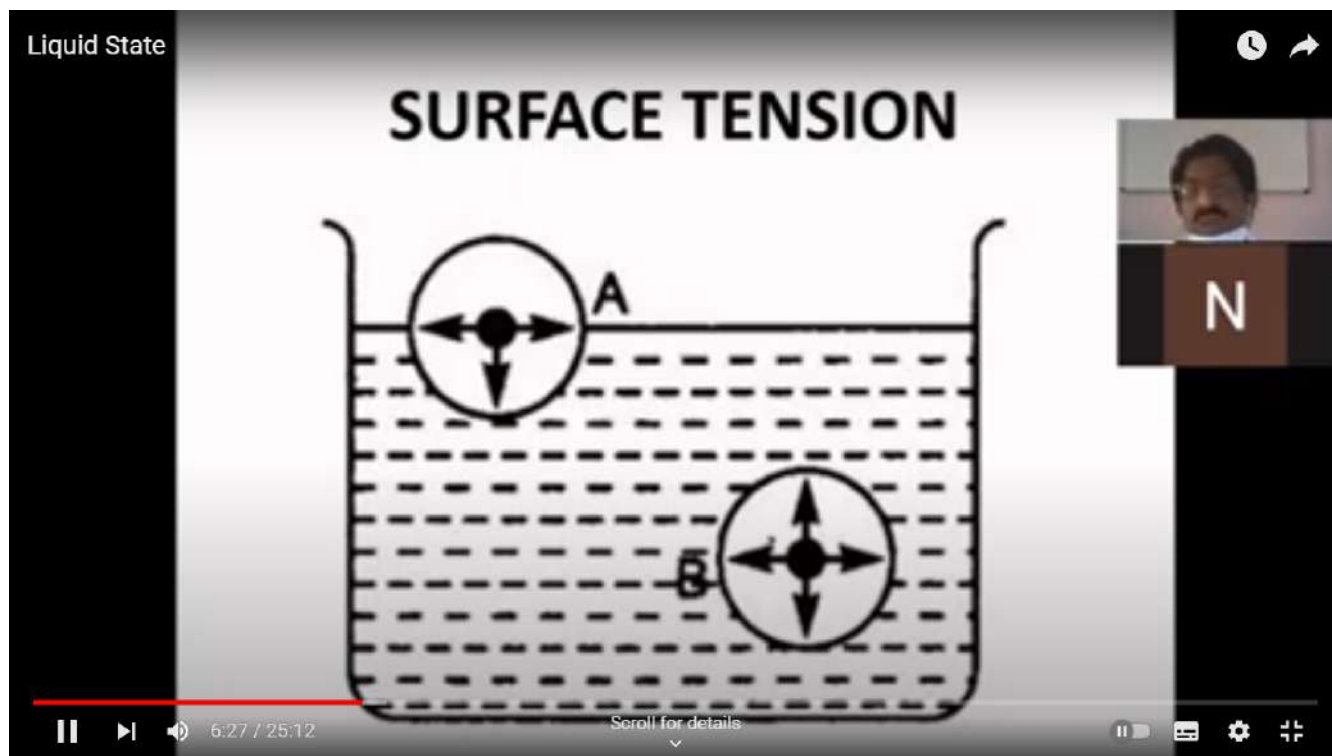
VISCOSITY

Image showing liquid dripping from test tubes, illustrating viscosity.

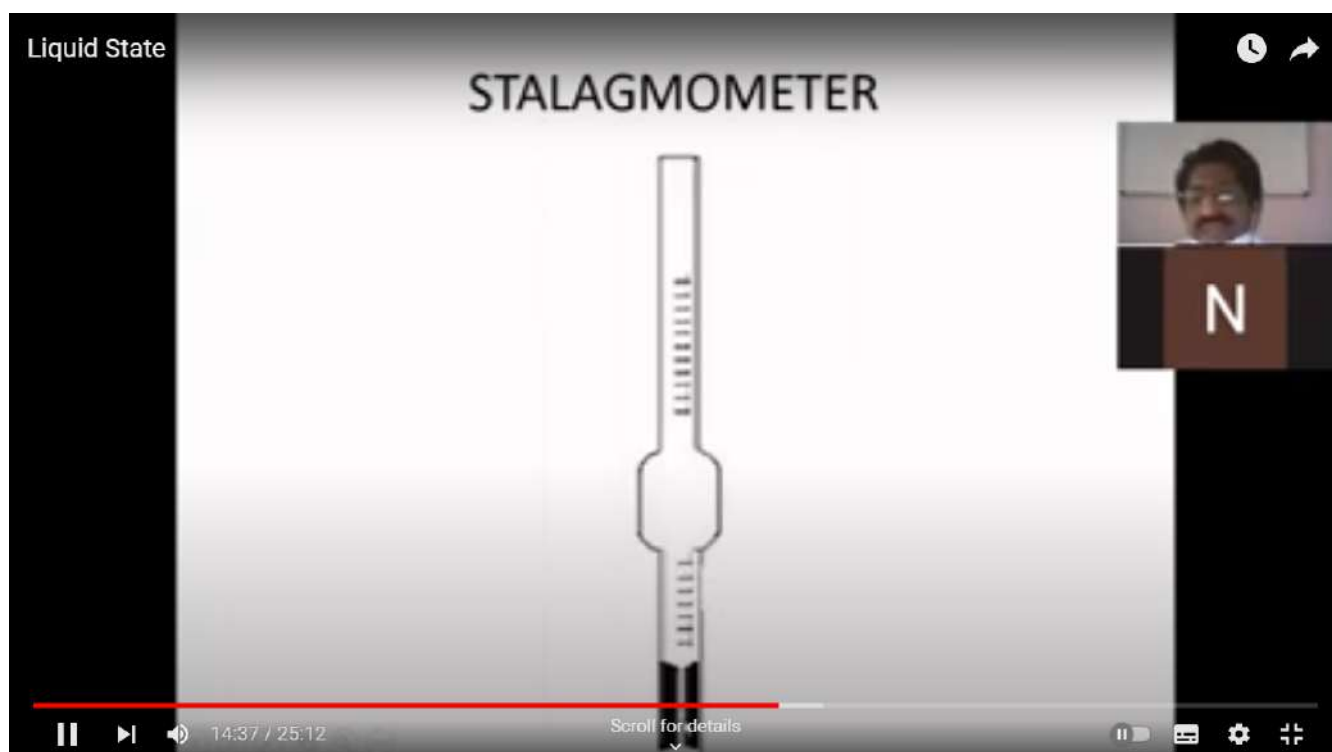


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5:18 / 10:18