

Determination of pH of unknown solution using Glass Electrode

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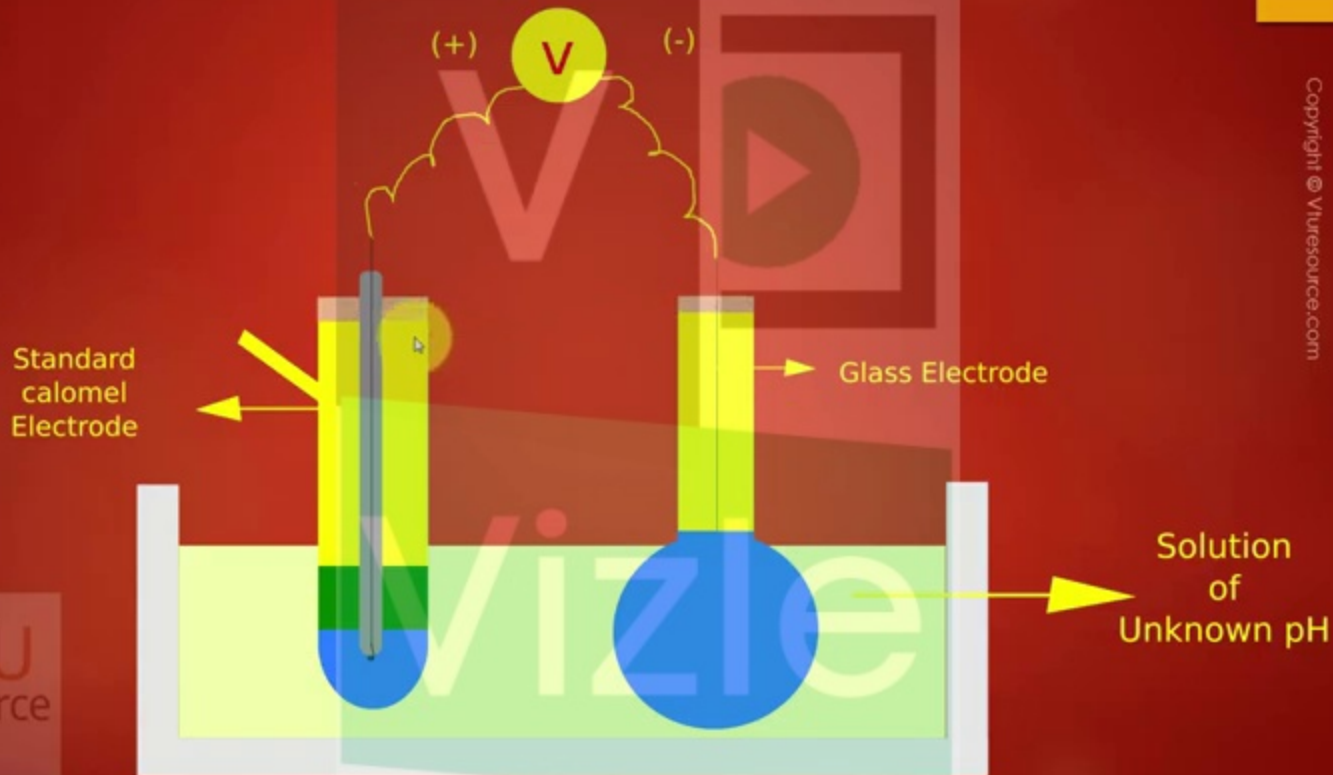
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pH of Unknown solution is determined by measuring potential of solution using glass electrode

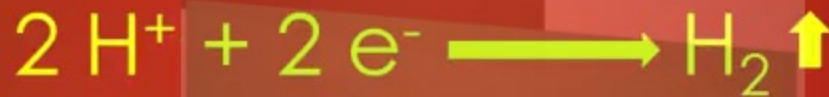
Cell Assembly



Cell Representation

$\text{Ag} | \text{AgCl} | \text{HCl} (0.1\text{M}) | \text{Glass} | \text{test Solution} || \text{KCl} | \text{Hg}_2\text{Cl}_2 | \text{Hg}$

Electrode reaction is assumed
to be reduction at cathode



By knowing the calomel electrode potential, glass electrode potential, pH of Unknown solution can be determined as:

$$E_{\text{cell}} = E_{\text{cathode}} - E_{\text{anode}}$$

$$= E_{\text{SCE}} - E_{\text{G}}$$

$$= E_{\text{SCE}} - \{ E^{\circ}_{\text{G}} - 0.0591 \text{pH} \}$$

$$\text{pH} = \frac{E_{\text{cell}} + E^{\circ}_{\text{G}} - E_{\text{SCE}}}{0.0591}$$



Thank You

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