

Electrified Interface: Structure and potential difference-absolute electrode potential-thermodynamics of electrified interface-reversible and irreversible states-electrode kinetics-Butler-Volmer equation-quantum oriented electrochemistry-chemical potential, energy states and distribution of energy –adsorption of ionic species and organic molecules at electrodes-mass transport-migration, diffusion and convection phenomena

Electro-analytical Techniques (principle and practice): Conductance and potential difference based titrations-potential sweep methods-CV, LSV, step and pulse techniques-hydrodynamic techniques-forced convection-diffusion controlled polarography-impedance methodselectroactive layers and modified electrodes-electrochemical sensors.

Industrial Electrochemical process-Electrodeposition of Alloys: Theory of alloy deposition-role of cathode diffusion layer, cathode potential and complexing agents-composition of bath and composition of deposit-correlation-structure and properties of alloy deposits.

TEXT BOOKS/REFERENCES:

1. Bockris and Reddy, "*Modern Electrochemistry*", *Kluwer Academic /Plenum Publishers*", 1998.
2. Brett and Brett, "*Electrochemistry (Principles, Methods and Applications)*", Oxford University Press, 2004.
3. Allen J. Bard and Larry R. Faulkner, "*Electrochemical Methods (Fundamentals and Applications)*", John Wiley and Sons, 2000.
4. Brenner, "*Electrodeposition of Alloys*", Academic Press, 1972.