
PHYSICAL CHEMISTRY LAB TOPICS
For Students of Faculty of Chemical Technology
Chemical Technology
Elective course: Electrochemistry and Chemical Kinetics
Semester IV, year. 2024/2025

Rate of chemical reaction. Rate constant. Order of the Chemical Reaction. Molecularity of the Chemical Reaction. Zero, first, second, and third-order rate equations.

Complex Reactions: reversible, parallel, competitive, consecutive. Inductive. Oscillatory Reactions.

Catalysis. Heterogeneous and Homogenous Catalysis. Mechanism of catalyst operation. Types of homogeneous catalysts in liquid solution. The dependence of rate of catalysis on the amount of catalyst. Acid-base catalysis. The principle of operation of heterogeneous solid catalysts. Catalyst supports (powder and monolithic)

Chemical and electrochemical corrosion (examples). Mechanism of electrochemical corrosion processes. Protecting from Corrosion. Chemical and electrochemical depositions of metal coating. Standard Electrochemical potentials series. Electrolysis

Theory of the strong and weak electrolytes. Conductometry. Conductivity. Specific conductivity. Methods of conductivity measurements. Law of independent migration of ions – Kohlrausch's law. Limiting molar conductivity determination for weak and strong electrolytes. Conductivity in non-aqueous electrolytes

Warning: Lab coat and safety glasses are required!

REFERENCES

1. P. Atkins, Physical Chemistry
2. RS. Barry, SA. Rice, J. Ross, Physical Chemistry, Wiley & Sons, New York 1980.
3. Physical Chemistry Instructions. <https://moodle.put.poznan.pl>