

CHEMISTRY 425 Analytical Chemistry II
Dr. Petr Vanýsek, Instructor
Test III – study guide for a test given on April 8, 2010

Know the principles of the experiments done in the laboratory and know also the calculations associated with the laboratories, performed so far.

Know the various topics presented in class, in particular those mentioned as possible test material.

Know how to derive expressions for mass analyzers based on magnetic sector and time of flight principle. Nevertheless, know also principles of other mass analyzers.

Know the difference between concentration and activity, know the methods that can be used to convert concentration into activity and know the errors that stem from using concentration instead of activity.

Know the cause of isotopic ratio observed in mass spectroscopy and know the mathematical principle that allows to figure out chemical composition from the intensities of M and M+1 peak.

Know the several “vacuum” surface techniques used for analysis, as they were covered in class.

Know the thermodynamic relationships between potential, Gibbs energy, equilibrium constants, reaction quotients and the associated calculations that may arise.

Know the principles of transmission electron microscopy and scanning tunneling microscopy.

Know how to calculate potentials based on the Nernst equation.

Know the principle of using reference electrodes in potential measurements, know the operating principle of the hydrogen electrode.