

MASS SPECTROMETRY CHEMISTRY 750 1 Unit

Tuesday @ 4:00- 4:50 PM
 Spring Semester, 2017
 Room XX-XXX

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Mass spectrometry (MS) has the distinction of providing the most structural information per unit of sample than any other chemical measurement technique. MS techniques have found application in nearly all aspects of physical and biological sciences. Costs have come down and instruments are commonplace. We will examine the instrumentation, ion formation and fragmentation processes, and specific applications using handouts and articles from current literature.

Text

Instrumental Analysis, Skoog, Holler and Crouch, 7th Edition, Chapters 11 and 20. (I will provide copies); at least half of the class material will be from the current literature.

Prerequisites

One course in analytical chemistry that covered chemical instrumentation; but without this you may have to do some supplemental reading.

Grading

Weekly quizzes (50%), class participation (15%), and a term paper (35%).

Topics

1. Modes of Ionization
2. Modes of ion fragmentation and adduct formation
3. Hardware and instrumentation
4. Hyphenated mass spectral methods
5. Specific applications

Learning Objectives

- To identify methods used to forms ions for purposes of compound identification and quantitative analysis
- To understand current uses and limitations of mass spectrometry
- To be able to read current literature that contain mass spectra and mass spectra data and to have a basic understanding of how that data should be interpreted
- To make judgments about the applicability of mass spectra to meet specific research objectives and to provide meaningful data in scientific research
- To delve more deeply into one aspect or topic in MS and to write a review of the topic

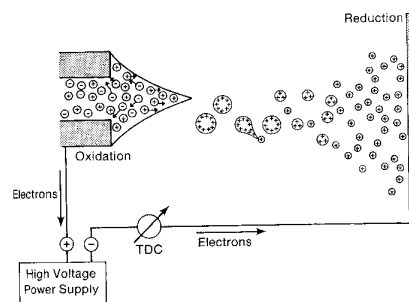
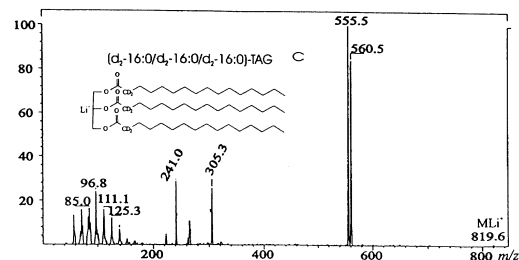
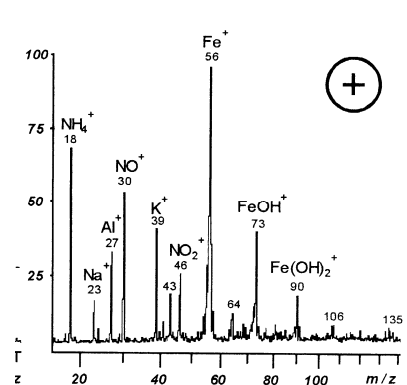


Figure 1. Schematic of major processes occurring in electro-spray. Penetration of imposed electric field into liquid leads to formation of electric double layer in liquid.

