University of Wisconsin-Madison, Department of Chemistry

CHEM 738: Introduction to Mass Spectrometry

Spring 2020: Thursday 9:55-10:45 am, room 2311, Chemistry
Instructor: Dr. Martha M. Vestling, Director, Chemistry Instrument Center Mass Spectrometry Laboratory
vestling@wisc.edu office = 2134 Chemistry, office hours: Mon. and Fri. 10 am to noon.

Class Schedule

week	date	topic
1	January 23	Mass Spectra and Ions
2	January 30	EI and CI (electron ionization and chemical ionization)
3	February 6	MALDI (Matrix Assisted Laser Desorption/Ionization)
4	February 13	ESI (electrospray ionization)
5	February 20	Ambient Ionization
6	February 27	MSMS (tandem mass spectrometry)
7	March 5	GCMS (gas chromatography/mass spectrometry)
8	March 12	LCMS (liquid chromatography/mass spectrometry)
	Spring Break	
9	March 26	Bottom Up Proteomics
10	April 2	Top Down Proteomics
11	April 9	Surfaces and Imaging
12	April 16	Ion Mobility Mass Spectrometry
13	April 23	Lab Tour (paper due)
14	April 30	New Developments

Each week we will be discussing and analyzing mass spectrometry papers.

Requirements for 1 credit:
1. Class attendance and participation: If you must miss a class, make sure you attend a mass spectrometry seminar. Attendance = 70% of grade.
2. Short paper (3-5 pages) that discusses the mass spectrometry of a particular group of compounds of interest to you (for example: phosphopeptides, disulfides, ruthenium complexes, yeast proteins, milk carbohydrates, synthetic polymers, drug metabolites). Sub sets of large general areas are needed. For example, proteins, peptides, DNA, polymers, metabolites are all too large. This assignment is NOT a research proposal. It is also NOT about your research. No more than one paper from you lab may be used. Cite at least four papers making sure that three have recent dates (2018-2020), Do not count review articles as part of the four. Each citation should include: authors, journal title, volume, pages, year, and the title of the article. Often mass spectrometry is a technique that is used to support a research project, so the mass spec information you need to discuss may only be found in a paper's experimental section and/or its supplemental information section. The challenge is to find the experimental details and figure out what was used to obtain mass spectra for your particular group of compounds. Look for ionization methods, analyzers, solvents, calibrants, sensitivity, resolution, clean up and sample handling details. Paper = 30% of grade. Your choice of topic is due April 2, 2020, at 9:55 am. The paper is due April 23, 2020, at 9:55 am.

Mass Spectrometry Seminars - Spring 2020:
Lisa Jones, University of Maryland (Pharmacy), Thursday, April 2, 2020: 12:05 pm in rm 1315 Chemistry
Hui Zhang, Johns Hopkins University, Friday, April 10, 2020: 3:30 pm in rm 2006, Rennebohm (Pharmacy)
Peter Nemes, University of Maryland, Thursday, April 16, 2020: 12:05 pm in room 1315, Chemistry
Kimberly Prather, University of California San Diego, Monday, April 20, 2020: 3:30 pm in rm 1315 Chem
Kimberly Prather, UCSD, Tuesday, April 21, 2020: 11 am in room 1315 Chemistry
Julia Laskin, Purdue University, Thursday, April 30, 2020: 12:05 pm in room 1315 Chemistry
Richard Yost, University of Florida, Thursday, May 7, 2020: 12:05 pm in room 1315 Chemistry