

Chemistry 322L: Exam Review

Exam Format

- Multiple Choice
- True/False

Techniques to Review from *Mohring (Fourth Edition)*:

- **Heating and Cooling Methods** Technique 6 (pages 73-86)
 - Boiling stones and sticks
 - Heating mantles and hotplates
 - Cooling sample-ice bath, don't put sample in until cool
- **Refluxing a Mixture** Technique 7 (Section 7.1; page 87)
 - Definition
 - What glassware setup looks like
- **Drying Agents** Technique 11 (pages 163-169)
 - What properties do we look for in a drying agent?
 - What do we use in lab as a drying agent
- **Recrystallization** Technique 15 (pages 221-235)
 - What is it
 - How do we choose a solvent for recrystallization
- **Melting-Point Theory** Technique 14 (pages 211-220)
 - Definition
 - A range (define what this range is), not a single temp
 - What happens to mp under certain conditions-wet sample, impure, mixture
- **Thin-Layer Chromatography** Technique 18 (pages 253-269)
 - Stationary phase, mobile phase, polarity's role
 - Choice of solvent
 - What can TLC tell us? Number of components, progress of reaction, purity of sample
 - Know how to read a TLC plate
 - Techniques used to mark colorless spots on TLC plate.
 - Calculation and definition of R_f
- **Liquid Chromatography** Technique 19 (Sections 19.1, 19.3, 19.6, 19.7; pages 270-287)
 - Stationary phase, mobile phase, polarity's role
 - Choice of solvent, polarity's role
- **Infrared Spectroscopy** Technique 21 (Sections 21.7-21.11; pages 325-344)
 - Could be asked to interpret IR of any compound (You will be given characteristic frequency table)
 - Will not be asked about instrumentation
- **NMR** Technique 22 (Sections 22.4-22.7; pages 357-366)
 - Could be asked to interpret NMR of any compound (You will be given characteristic chemical shifts)
 - Predicting number of ^1H and ^{13}C NMR signals
 - Will not be asked about instrumentation

Calculations to Review

- Percent Yield (page 35-36)
- Theoretical Yield
- Limiting Reactant
- Calculation of R_f (page 263-264)
- Calculations where reactants aren't 100% pure (review labs)

Miscellaneous

- Beilstein Test-what is it and what does it test for.
- Know lab equipment and glassware we have used in organic lab, what it is used for, and how to set it up.
- Know definition of chemiluminescence and what goes on during these reactions.
- Know, in general, when you have 2 layers form in an extraction which solvents are more dense than water and which are less dense.