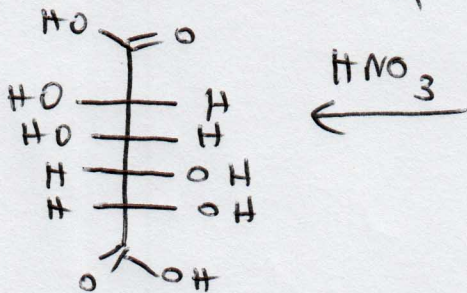
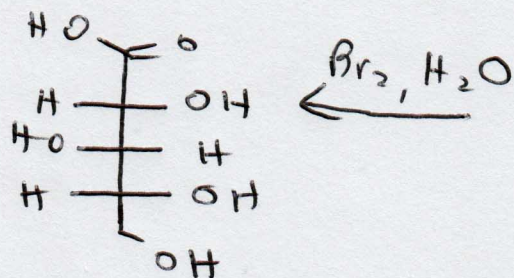


6/19/12

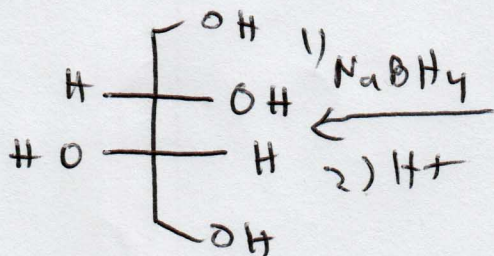
1a. D-mannaric acid



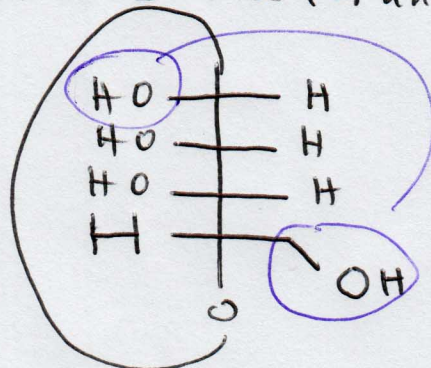
b. D-xylonic acid



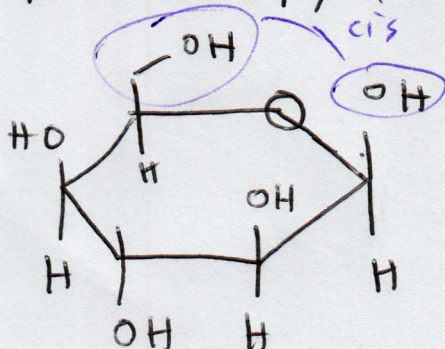
c. L-theitol



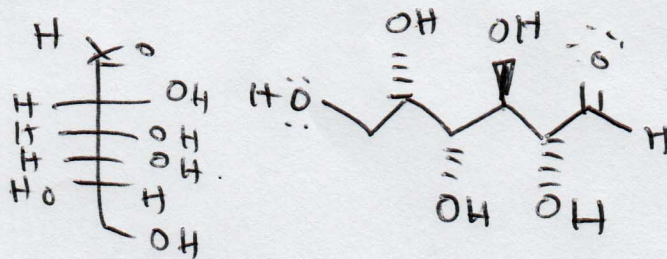
d. α -L-ribofuranose



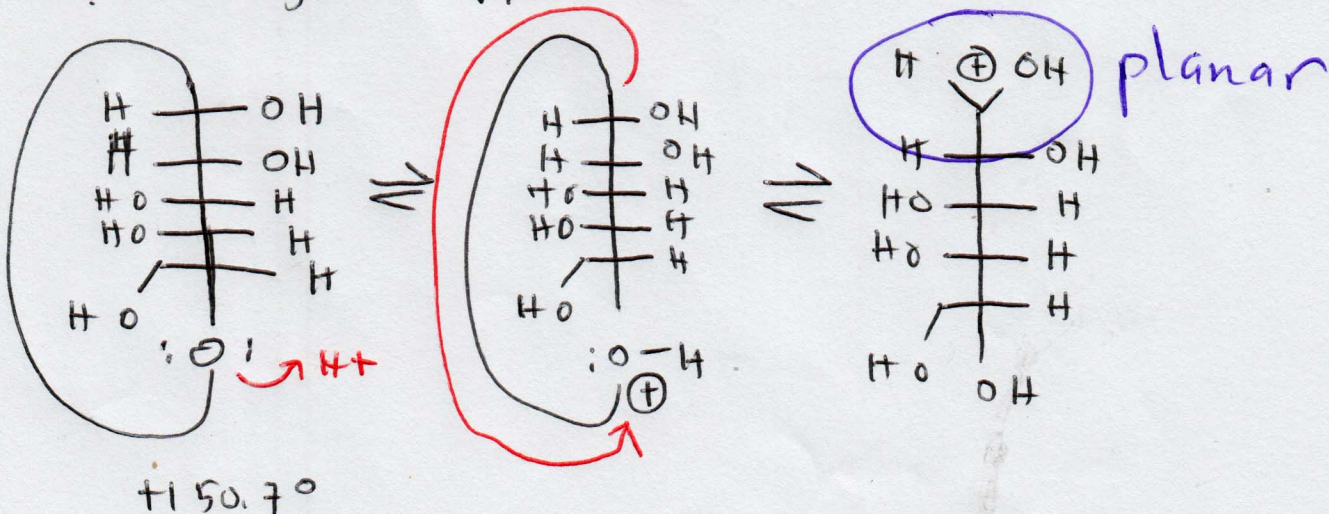
e. β -D-idopyranose

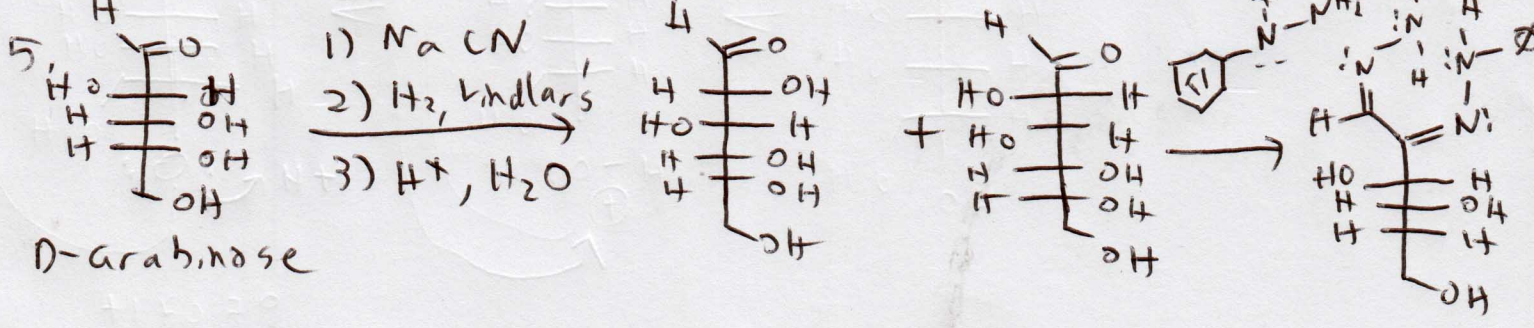
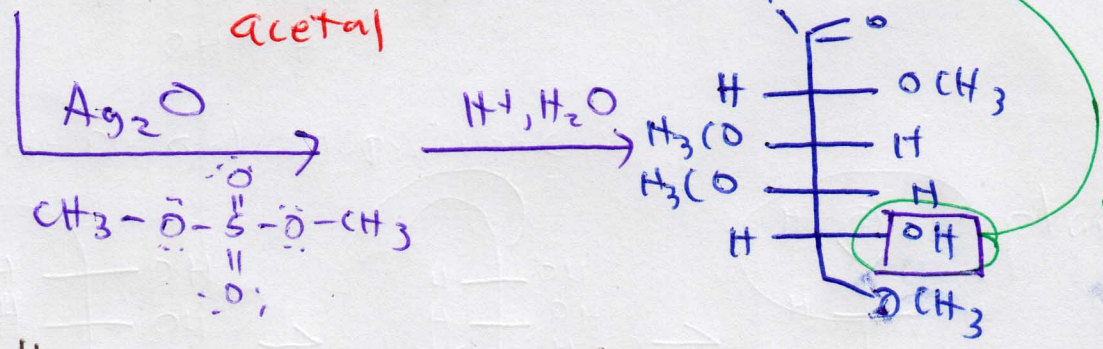
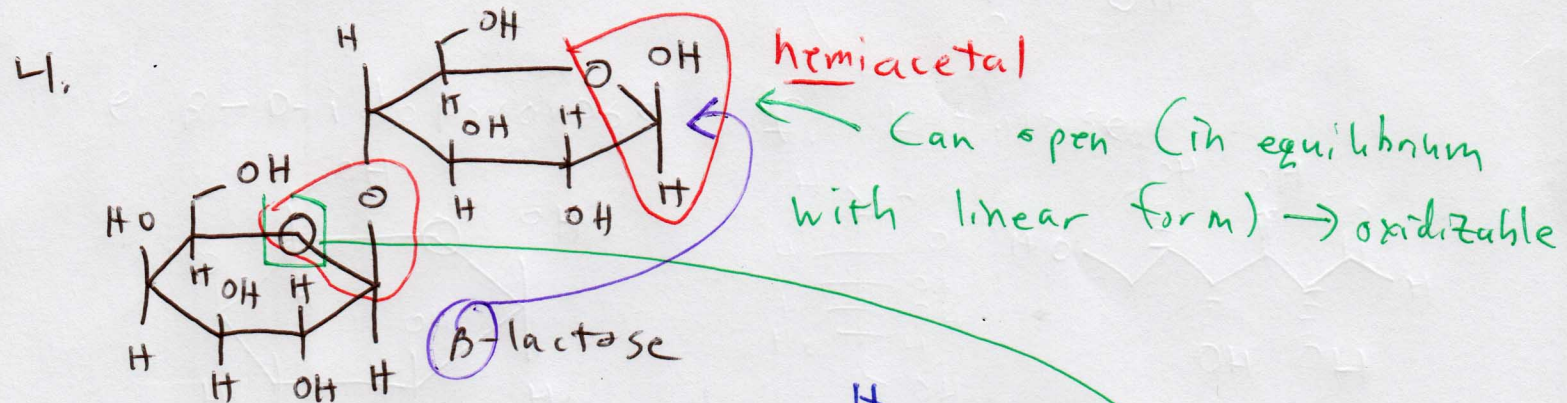
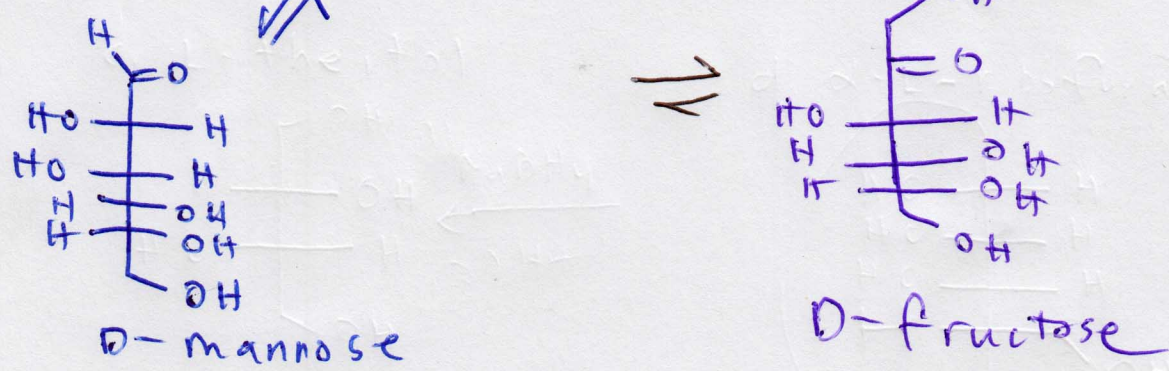
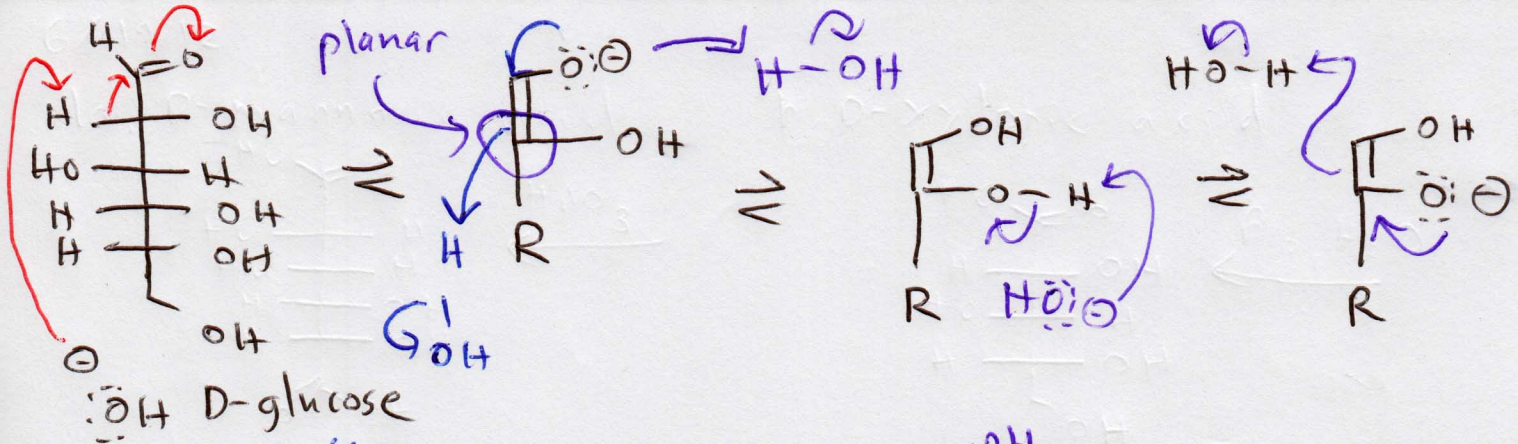


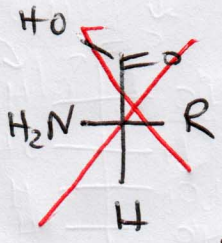
f. L-tulose



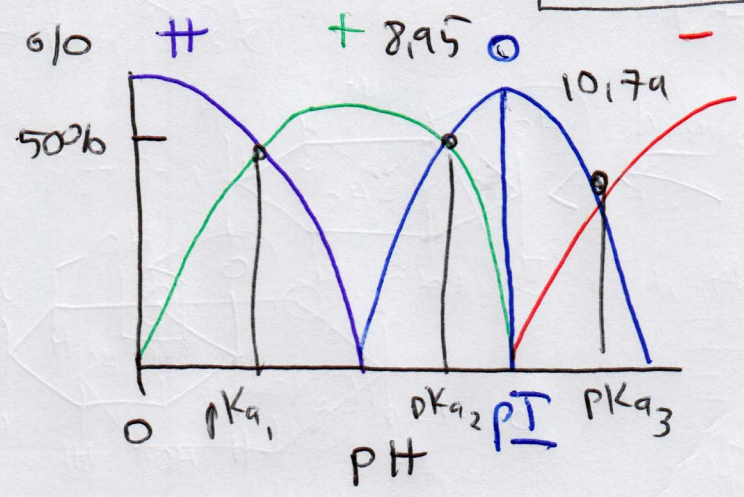
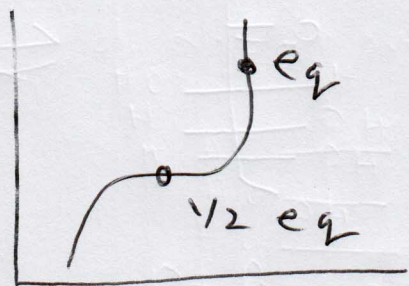
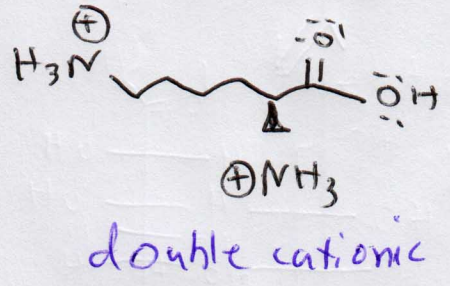
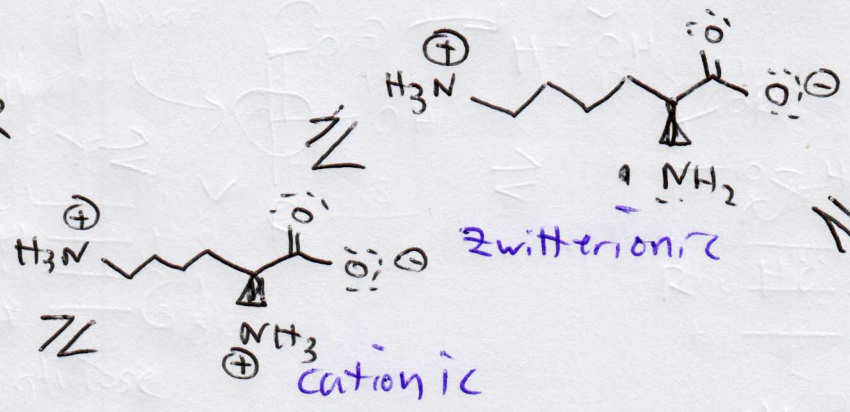
2. α -D-galactopyranose







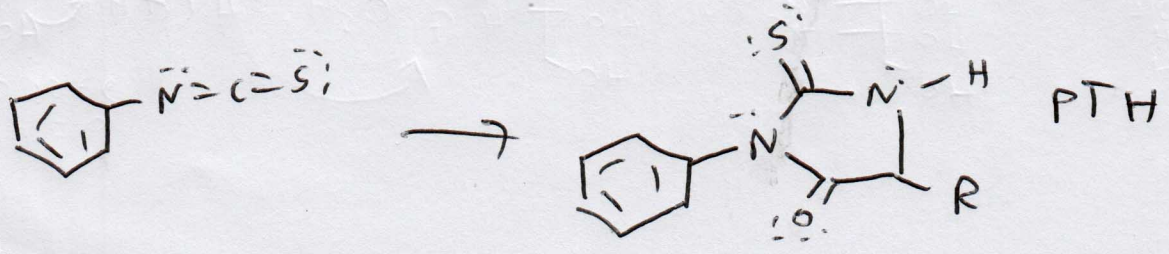
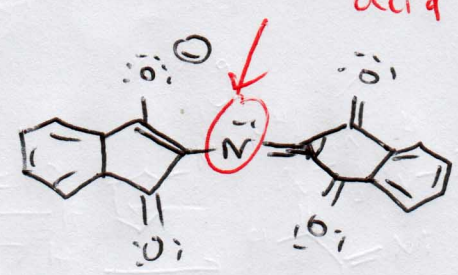
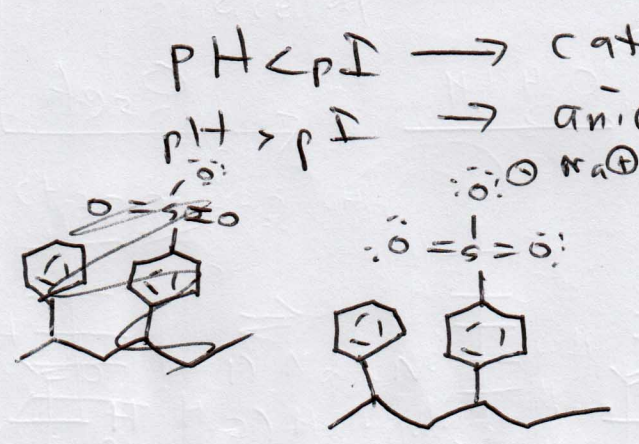
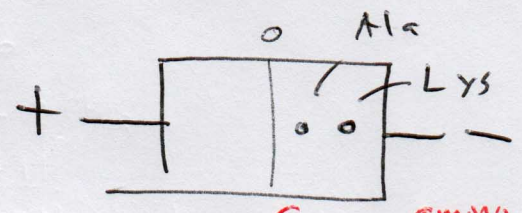
pK_{a1} 2.18
 pK_{a2} 8.95
 pK_{a3} 10.79



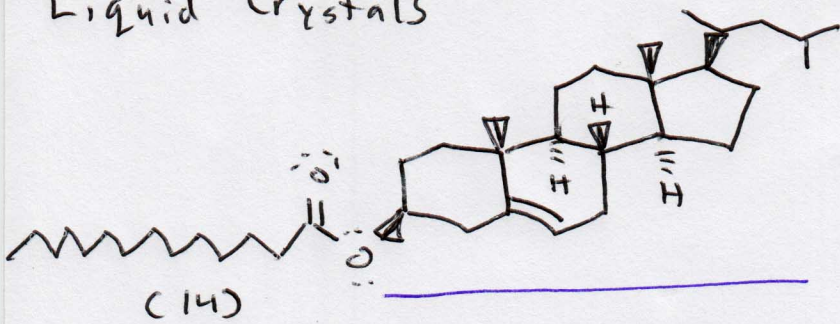
$\text{pI} = 9.87$

$\text{pH} < \text{pI} \rightarrow \text{cationic}$
 $\text{pH} > \text{pI} \rightarrow \text{anionic}$

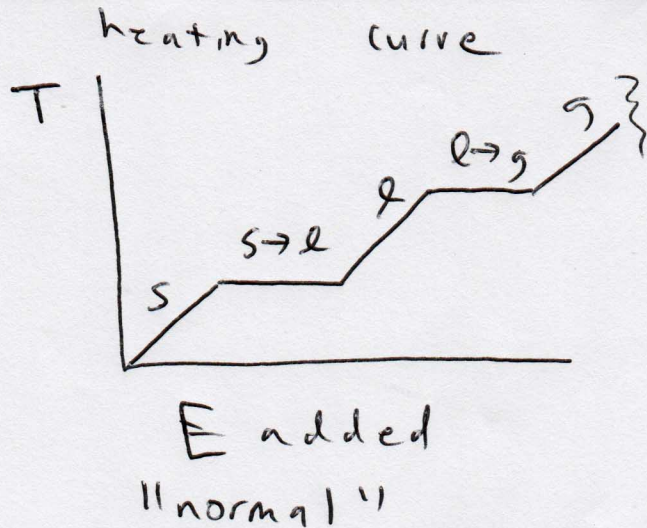
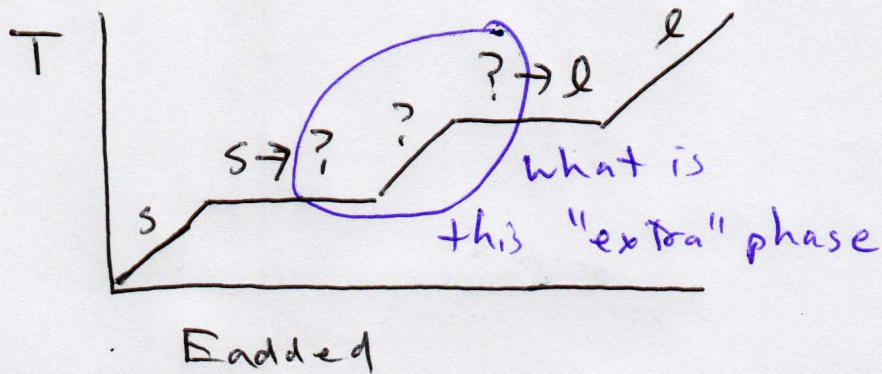
$4.20 < 6.02 < 9.87$



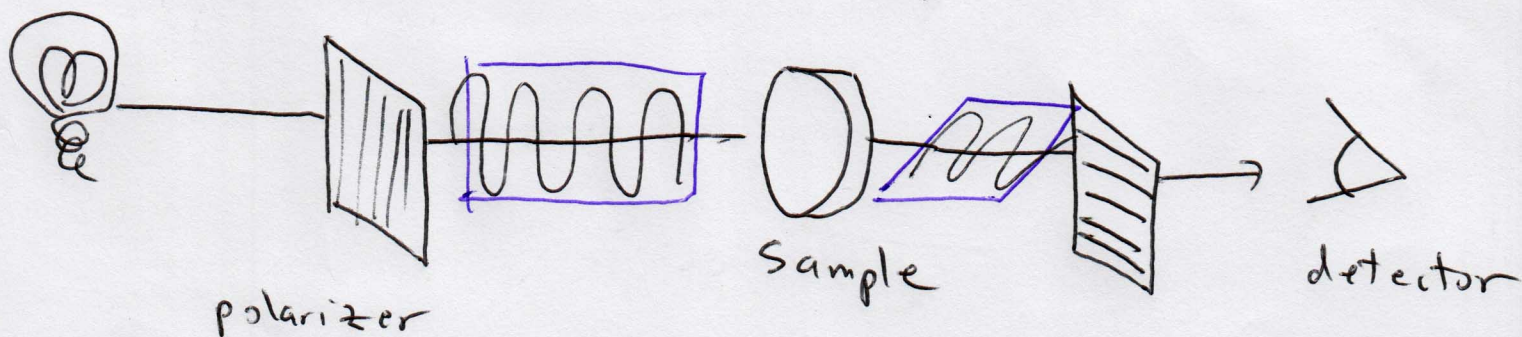
Liquid Crystals



cholesteryl myristate



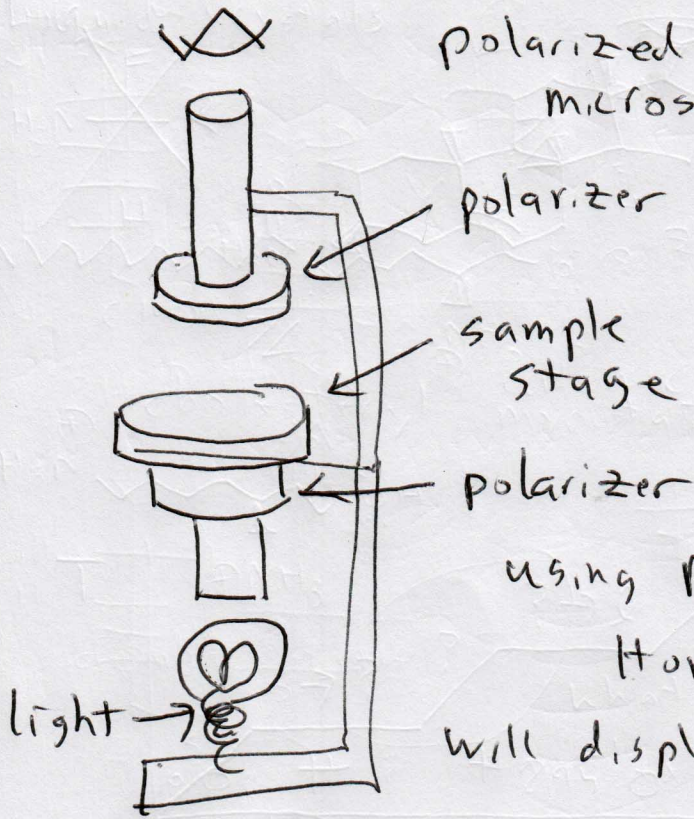
PLM - polarized light microscopy



If light is passed through orthogonal polarizers with no sample between the polarizers, no light will reach the detector.

optical anisotropy - altering of light due to interaction w/ a sample (or) the property of a material that interacts differently w/ light depending on how light passes through that material.

polarized light microscopy



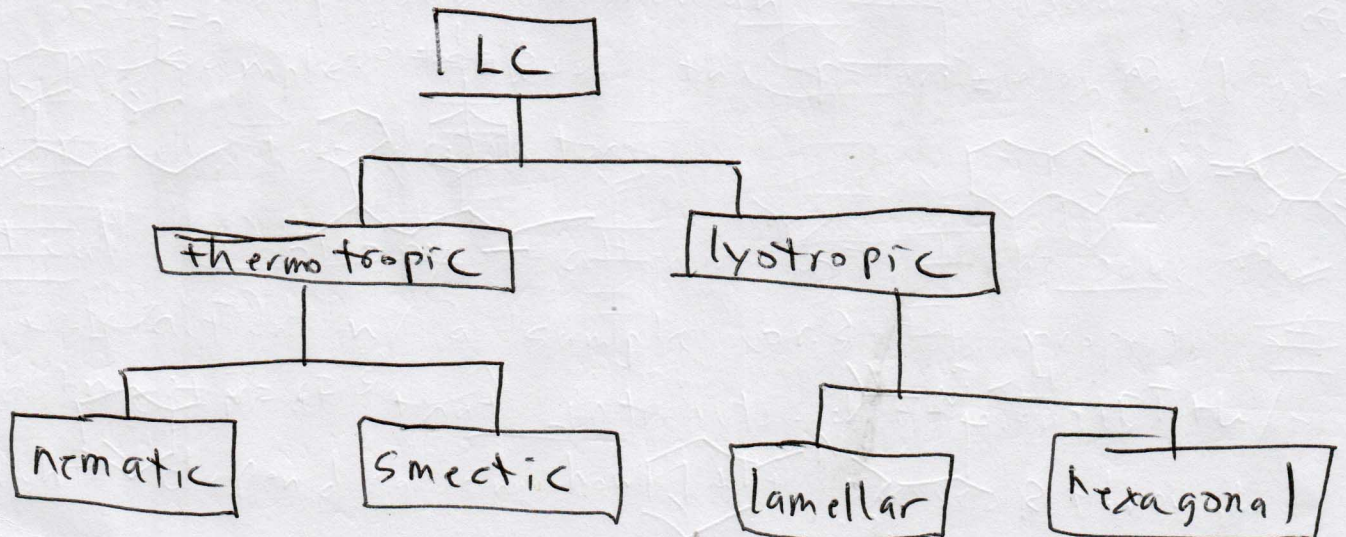
True liquids are isotropic because they have no internal structure (ignore chirality). Thus, nothing remarkable will be observed in liquids using PLM.

However, structured, crystalline solids will display colorful patterns under PLM.

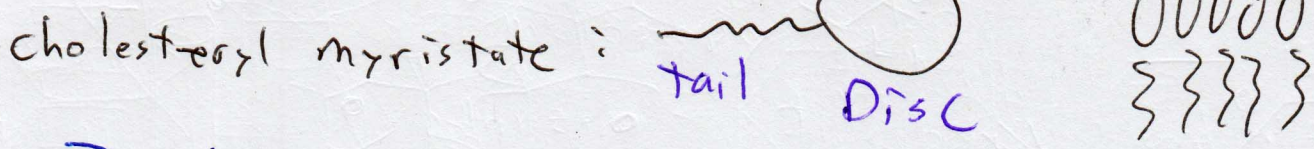
Liquid crystals appear liquid, but exhibit the kinds of patterns under PLM as crystals, meaning liquid crystals are anisotropic.

mesophase - a phase that has ~~the~~ some of the structural order of a solid but ~~the~~ some of the fluidity of a liquid,

explains multiple melting + anisotropic behavior



Thermotropic LCs - Single component systems

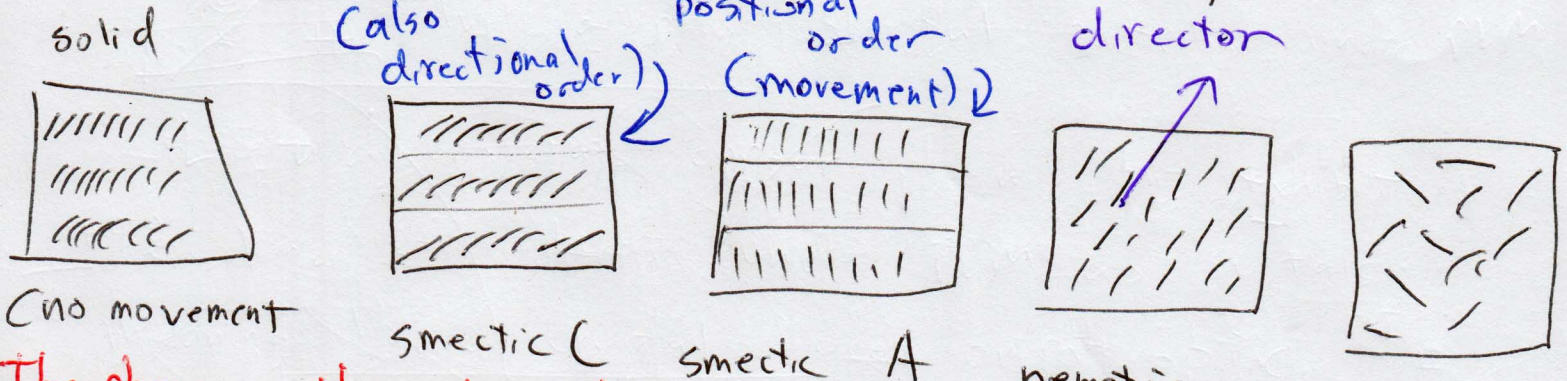


In thermotropic LCs, two contrasting effects occur

mobility → tails: long, flexible, harder to crystallize; melt more easily than rest of structure

order → cores: very rigid and easily crystallize; try to maintain order as rest of molecule melts

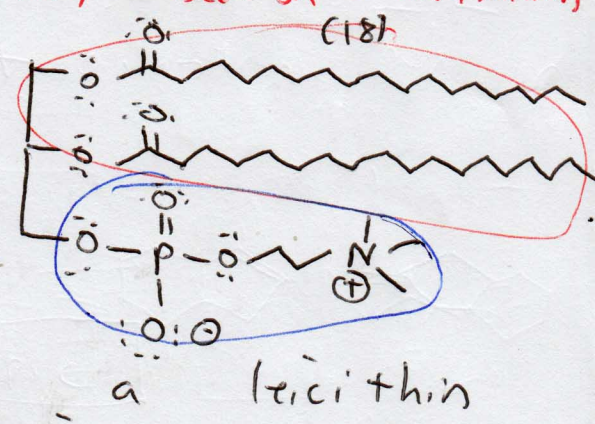
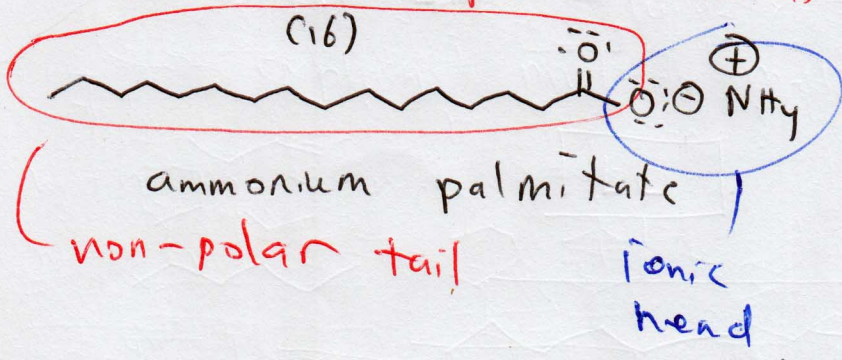
Low T | solid | smectic C | smectic A | nematic | liquid | High T



The phase a thermotropic LC forms is mainly based on temperature

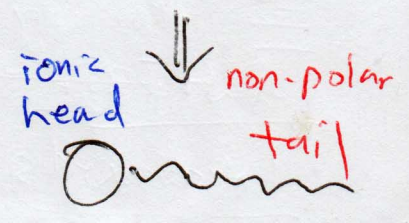
Lyotropic LCs - Solutions / Mixtures

The phase a lyotropic LC forms is mainly based on concentration



hydrophilic/phobic - water-loving/fearing
 lipophobic/lipophilic - fat-fear/loving

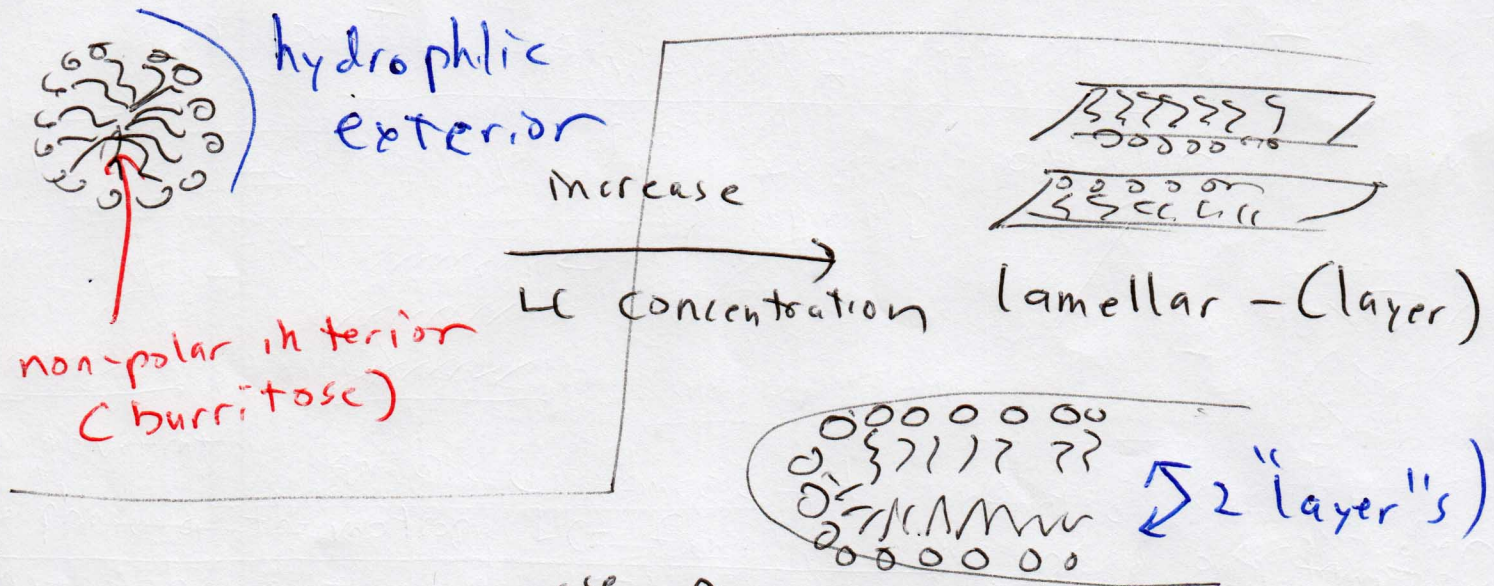
amphiphiles - molecules that are both hydrophilic + lipophilic



Surfactant - active @ the interface between organic + aqueous phases

The type of phase formed by a lyotropic LC does depend on concentration, but also on the relative geometric size of the head + tail groups

Micelle - forms when LLC reaches CMC
 - critical micelle concentration



hexagonal phase

increase concentration

b. layer → membranes

