

TOPICS FOR SECOND SEMINAR
FALL 2005

These files are in Adobe Acrobat format, if you are using Netscape Navigator or Internet Explorer and have Adobe Acrobat Reader installed (If you do not; Acrobat Reader can be down loaded for free from Adobe) these files should open directly in your browser.

1. Two models (concerted and sequential) of allosteric regulation and the pathway for oxygenation of hemoglobin
2. Tautomerism of nucleic acid nitrogen bases and non-Watson-Crick base pairing
3. Fuel Cells
4. Solar Cells
5. Trace Metal Analysis in Drinking Water
6. Remote Sensing of Air Polutants
7. Sampling in Soils, Sediments etc with respect to history/archeology.
8. Quantitative Measurements using IR Spectroscopy
9. Use of H-2 (Deuterium) isotope in NMR Spectroscopy
10. Transition – Metal Catalyzed Reactions of Organic Molecules
11. Stereoselective Catalytic Epoxidation Reactions
12. Entropy and it's Effect on Acidity of Organic Acids
13. Bonding-antibonding MO Interactions Effect on Relative Energies of Alkenes, Carbocations and cofomers
14. The Relationships Between Physical Properties of a Molecule and its Partitioning into Environmental Media (soil, air, water, sediment biota) for a Model Contaminant Like DDT or a Chemical That is a Current Concern Like Brominated Flame Retardants
15. The Chemical Nature of Carcinogenesis. Mechanisms of Model Carcinogens (Benzo [a] Pyrene, Aflatoxin); properties that allow a chemical to be Carcinogenic; Functional Groups on DNA Susceptible to Reaction
16. Modification of Conventional Synthetic Processes to Create "Green" Processes that Generate Less Waste and Less Environmentally Harmful Byproducts
17. Drug Delivery Using Nanotubes
18. Photoelectrochemical Solar Cells
19. Carbon Nanotubes
20. RNA Interference

21. Neurotransmission and the Fusion of Synaptic Vesicles to Membranes
22. Electrochemical Biosensors
23. Trace Analysis and Clean Rooms
24. Hybrid Instrumental Methods (FTIR, ICPMS, HPLCMS., GCMS etc)
25. Self Assembly Systems
26. Surface enhanced Raman spectroscopy (SERS)
27. Differential scanning calorimetry in forensic natural fiber analysis
28. FTIR microscopy in the identification of forensic paint samples
29. Techniques for measuring gas pressures
30. *In situ* environmental remediation
31. Inhibition of DNA replication by dyes
32. Use of “mini STRs” for amplification of degraded DNA samples
33. Use of male specific Y-STRs for amplification of DNA
34. Sequencing of heteroplasmic mitochondrial DNA
35. Cross-reactivity of weasel and human blood in antibody based reactions
36. Use of microarrays for purification, amplification and chromatography of DNA in forensic settings
37. Palladium-catalyzed amination reactions of arylhalides: Synthetic routes for increasing molecular value by readily available materials to highly desirable products
38. Main-group containing polymeric materials: New materials with enhanced geometries and flame retardance than conventional polymers