Assignment #5: Searching, Bibliography & Database

Select a colorimetric chemical indicator or sensor from the following list: Litmus (pH), Bromthymol Blue (pH), Phenolphthalein (pH), Eriochrome Black T (pM), Alizarin (pM), Calmagite (pM), Phenanthroline (pV), Bipyridine (pV), Indigo and its Sulfonic Acid Derivatives (pV), CO Blob Detector* (CO sensing), Suslick Plates* (CO_2 Sensing), Fluorescent Oxygen Sensor* (O_2 Sensing), and Fluorescent Ozone Sensor* (O_3 Sensing). Leading references will be provided for items marked "*". The selection of other topics is possible and can be considered in consultation with the instructor. Answer the following questions for the colorimetric chemical indicator / sensor of your choice.

(a) Chemical Identity & Function (Section #1). Search the literature and (1) learn the chemical name of the colorimetric chemical indicator / sensor and common synonyms, (2) find the chemical structures of the (most important) compounds involved in the signaling event, (3) learn about the suggested / best uses, (4) find the common / typical concentration when used in a typical application, and (5) take note of any potential problems (hazards, errors). Write one paragraph, show the structures in a Scheme (use ChemDraw), and cite your sources as endnotes.

(b) Spectroscopic Characterization (Section #2). Research the literature and locate the following spectra for both forms of the colorimetric chemical indicator / sensor of your choice: (1) ^{1}H-NMR spectrum, (2) ^{13}C-NMR spectrum, (3) UV/Vis spectrum, and (4) results of one more analytical method of your choice. Import the spectra (images) into Word and show the spectra as Figures or list spectroscopic data in "one-dimensional table" format (i.e., as in an experimental section of a journal article). Write a very brief experimental section in which you describe how the spectra were recorded. Cite your sources as endnotes.

(c) Structure Search & Synthesis (Section #3). Perform a structure search and find literature on the synthesis of the colorimetric chemical indicator / sensor of your choice. List up to a total of five "leading references" to the various possible syntheses. Then pick one of the syntheses and list pertinent references (up to five) for this specific synthesis. Write one paragraph, show the synthesis you picked in a Scheme (use ChemDraw), and provide references as endnotes.

Submission & Deadline: The assignment must be completed with MS Word with *JOC* formatting. Submit one Word file "A05_'your name'.docx" with three sections (each section starts on a new page, endnotes are listed after each section with continuous endnote numbering) by Tuesday, 03/01/11, midnight. Bring one hardcopy to class on Wednesday, 03/02/11.