TEACHING PHILOSOPHY

My teaching philosophy is to make the learning of chemistry fun as well as demanding of effort and worthwhile in the use of a student's time. I have done this in class and the laboratory using ordinary speech, the chalkboard, the overhead projector, the performing of demonstrations and audio-visual materials (both authored and commercial VCR disks). I am author to several cartoon overhead slide presentations for instruction in organic, biochemistry and physical chemistry as well as an overhead projector transparency adventure-rescue hunt for groups of students at the end of a freshman chemistry course.

During my teaching assignments at Lexington Community College and Southeast Community College both of the University of Kentucky, students in freshman, nursing and organic courses were expected to read magazine or journal articles dealing with chemistry and to write reports of what they read. The students were asked not only to summarize but to reference how the chemistry discussed in an article related to chemistry presented in class. The essence of the technique of the use of readings to then promote writing to promote learning skills was presented in the publication:

Van Woert, Jr., H.C., "Writing to Improve Problem Solving Skills," Innovation Abstracts 15(4), February, 1994.

1-5/2003 Univ. Wisconsin Whitewater Physical & Consumer Chemistry

Teaching Experience:

Date	Institution and Address	Subject	Number of Terms
From 1/94 To 5/94	Lexington Community College University of Kentucky Lexington, KY	Chemistry	
From 8/91 To 6/93	Southeast Community College University of Kentucky Cumberland, KY	Chemistry Freshman Nursing Organic	4
From 1/89 To 3/89	Columbus State Community College Columbus, OH	Freshman Chemistry	1/2
From 8/86 To 9/87	Tennessee State University Nashville, TN	Freshman Chemistry Physical Chemistry Lab.	1/4 2
From 3/83 To 9/84	Columbus State Community College Columbus, OH	Nursing Organic & Biochemistry	1

Writing to Improve Problem-Solving Skills

Writing in chemistry courses helps students develop problem-solving skills and reflect on material necessary for understanding and applying knowledge. I have discovered three particularly effective writing assignments—news articles, critical insights, and scientific reports.

❦

News articles are reports about magazine or newspaper articles which are relevant to material covered in lecture and laboratory. They are to be completed in a book report format. The destruction of the ozone layer and danger in food additives are representative of typical chemical news topics. Reports consist of short summaries of the articles and their conclusions.

Scientific reports require reading outside the textbook, directly applying the principles covered in lecture, and using three literature references.

Critical insights ("AH, HA!" experiences) are brief descriptions of understanding. Sometimes subjective, they are intended for the student's self-examination of his or her thinking/learning process. Critical insights in the introductory chemistry course include such topics as radioactive decay of elements and understanding the metals and nonmetals in the periodic table; in general chemistry, they include such subjects as the photoelectric effect, elemental analysis, and the thermodynamics of rubber stretching; in organic chemistry, they include insights on such subjects as the physical properties of organic compounds. One student commented on critical insights: "Working problems is like playing a sport. In order to be good at something, one has to practice. To master the game, one must be familiar with the basic concepts, put these concepts into play, and practice to become better."

❦

All assignments are awarded points to be used in determining students' final grades. Students tying the news article, scientific report, and critical insight to lecture earn bonus credits. Relating assignments to class discussion indicates that students are making the important connections between content covered in class and the "real world."

Howard C. Van Woert, Jr., *Instructor, Chemistry*

For further information, contact the author at Southeast Community College, University of Kentucky, Cumberland, KY 40823.

Announcing the sixteenth annual

International Conference on Teaching Excellence and Conference of Administrators

May 22-25, 1994 ★ Austin, Texas

The National Institute for Staff and Organizational Development (NISOD)—based in the Department of Educational Administration, College of Education, The University of Texas at Austin—celebrates excellence in teaching and leadership through its annual conference, which attracts more than 1500 teachers and administrators each year. The event, co-sponsored by the League for Innovation in the Community College, will be held at the Hyatt Regency, Four Seasons, and Radisson Hotels

PRE-CONFERENCE SEMINARS
Sunday, May 22 • 2:00-4:00 p.m.

★ James Hammons, *Professor of Higher Education, University of Arkansas*
★ William Moore, Jr., *A. M. Aikin Regents Chair in Junior and Community College Education Leadership, The University of Texas at Austin*
★ Donald Phelps, *W. K. Kellogg Professor, Community College Leadership Program, The University of Texas at Austin*
★ John E. Roueche, *Sid W. Richardson Regents Chair, Community College Leadership Program, The University of Texas at Austin*
★ Claire Weinstein, *Professor, Educational Psychology, College of Education, The University of Texas at Austin*
★ Wally Cox, *Professor, Computer Science and Country-Western Dancing, College of the Canyons, California*
  ★ **Heel & Toe** *(little or no dance experience required)*: 9:00 a.m.-10:30 a.m. *OR* 1:30-3:00 p.m.
  ★ **Texas Two-Step** *(some dance experience recommended)*: 11:00 a.m.-12:30 p.m. *OR* 3:30-5:30 p.m.

★ **For more information**, *contact Suanne Roueche, Director, NISOD, at 512/471-7545.*

Suanne D. Roueche, Editor

February 11, 1994, Vol. XVI, No. 4

INNOVATION ABSTRACTS is a publication of the National Institute for Staff and Organizational Development (NISOD), Department of Educational Administration, College of Education, EDB 348, The University of Texas at Austin, Austin, Texas 78712, (512) 471-7545. Funding in part by the W. K. Kellogg Foundation and the Sid W. Richardson Foundation. Issued weekly when classes are in session during fall and spring terms. ISSN 0199-196X

Howard C. Van Woert, Jr.

Detailed Research Proposals: (details upon request)

1) Determination of the Association of Pyridine with Benzene and Methyl Iodide with Benzene

2) NIH Manadomanzamines (2004)

3) SBIC Endohedral Fullerenes (1991)

Interests: Materials, Sensors

1) Nanatubes, Fullerenes, Pnthalocyanines
2) Multi-pattern Chip Gas Sensors
3) Sonoluminescence with temperature
4) Sensor Arrays
5) Sol-gel Synthesis
6) Nanowire, wiring molecules
7) Clustering
8) Charge-transfer Transistor
9) Silica, cyclopeptide formulations
10) Methane Hydrates

11) Artificial Kidneys
12) Electrophysiology/Membranes

Howard C. Van Woert Jr., Ph.D.

Research Plans

Development of Sensors which can be incorporated in polymers.

Use of NMR to study the association of compounds in solvents.

Computer simulation of association and reaction of compounds under normal and extreme conditions.

Development and understanding of iron, molybdenum and vanadium catalysis of organic compounds under mild hydrogenation conditions.

Understanding why some compounds such as Mo2S12 and Mo3S13 do not give a discernable chemical shift in NMR spectroscopy.

Development of a method to mass produce Met-Cloz (M4C12).

Development of new methods to mass produce endofullerenes (M@C60).

Anion Detection by NMR.
Relating Kinetic Rate & Equilibrium Constants

CONFIDENTIAL: for employment consideration

Research Proposal

PURPOSE:

To synthesize amino acid surfactants, study of their properties.

To study oscillating reactions in surfactant media.

To study polypeptides, nucleotides and trace metal complexation in surfactant systems.

DISCUSSION:

Life requires the interplay of three factors. These factors as described by J. R. Holum[1] are materials, energy and information. Lipids along with amino acids, the building blocks of proteins, make up the materials for life. Carbohydrates as well as lipids are the source to generate energy for life. Finally, nucleic acids are the building blocks of DNA and RNA which contain the information for maintenance and proliferation of life.

The herein projects of this proposal while attempting to mimic nature in surfactant media, will explore and define the facets of chemistry involved.

CONFIDENTIAL: for employment consideration

Research Proposal

Howard C. Van Woert, Jr., Ph.D.

Purpose:

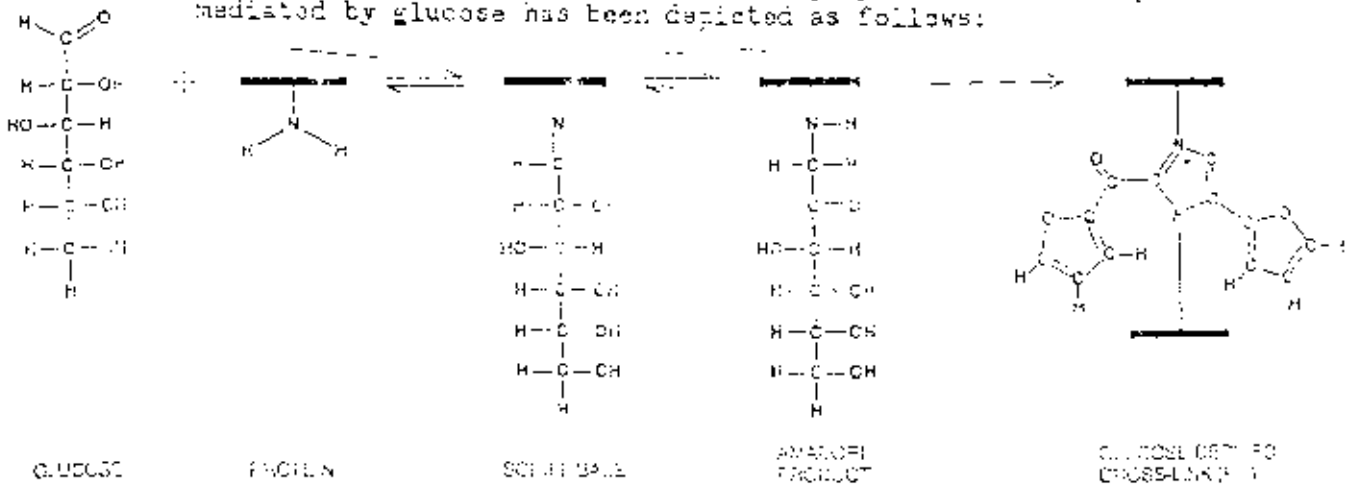
To investigate glycosylation of polypeptides and nucleotides.

To investigate the intercalation and covalent binding of polynuclear aromatic (PNA) compounds to polynucleotides.

Discussion:

The process of aging has been seen in the heightened symptoms of diabetics. These blatant symptoms are loss of resiliency in muscles and rigidity in blood vessels. Glycosylation, the attachment of sugars to proteins by enzymes, is done routinely for cellular needs. However, nonenzymatic "glycosylation" leads to irreversible crosslinking between proteins and nucleotides. This accumulation of crosslinkages is deemed a major contributor in aging and diabetes.(1)

The irreversible crosslinking of polynucleotides and proteins mediated by glucose has been depicted as follows:



CHEMICAL STRUCTURE is known for glucose-protein Schiff bases and Amadori products. Workers have yet to learn the structure of most AGE's and AGE-derived cross-links, but one link has been identified: 3-furanyl-4(5)-(2-furanyl)-1*H*-imidazole, or FFI.

A glucose molecule forms a Schiff base with an amine group of a protein or polynucleotide. An Amadori product is then formed by addition and loss of a proton. The Amadori product is an activated species which has been shown to lead to advanced glycosylation end product (AGE).