



**August 8-12**

**FOURTH BIENNIAL  
CONFERENCE ON  
CHEMICAL EDUCATION**

**DIVISION OF CHEMICAL EDUCATION  
AMERICAN CHEMICAL SOCIETY**



**Program**

# PROGRAM

## SUNDAY AFTERNOON AND EVENING

Chadbourne Hall

1:00-6:00—Arrival and registration.

6:00—Buffet dinner.

3650 Humanities Building

B.Z. Shakhshiri, *Moderator*

8:00—Welcome. Edwin Young, Chancellor, University of Wisconsin—Madison and Richard Fenske, Chairman, UW—Madison Chemistry Department.

8:30—1. Catalytic Address I. Consequence-Oriented Instruction for Chemical Educators. W. J. Popham.

Chadbourne Hall

10:00—Beer, pop, and pretzels (B-P-P).

## MONDAY MORNING AND AFTERNOON

Chadbourne Hall

7:15-8:00—Breakfast

1351 F. Daniels Chemistry Building

J. A. Bell, *Moderator*

8:30—2. Catalytic Address II. What Goes Up Stays Up: Models for Stratospheric Chemistry. F. S. Rowland.

9:20—Discussion.

9:45—Coffee Break.

Discussion Session

S. Kirschner, *Moderator*

10:15—3. Individualization in Chemistry Within a Traditional Schedule. E. Bank.

10:20—Discussion.

10:35—4. The Teaching of Concepts in Introductory Chemistry Courses at the University of Wisconsin—Madison: An Analysis. E. S. Kean.

10:40—Discussion.

10:55—5. Why Johnny Can't "Do" Chemistry. E. S. J. Tomczko, L. R. Betz.

11:00—Discussion.

11:15—6. Pre-College Chemistry. Self-Paced for the Underprepared Student. C. C. Houk.

11:20—Discussion.

11:35—7. Group Process: A Viable Alternative in the Classical vs. Personalized Instruction

11:40—Discussion.

11:55—8. But I *Told* You! Don't You *Know* It?? (Informal Testing for Formal Thinking).  
J. Copes.

12:00—Discussion.

Chadbourne Hall

12:30-1:15—Lunch

2:00-5:00—Open Period. An opportunity to get together informally (e.g., to discuss the issue of the public understanding of science), visit the exhibit paper area in the Wisconsin Center, take a tour of the UW—Madison Chemistry Department, etc.

Chadbourne Hall

5:30—Dinner

## MONDAY EVENING

3650 Humanities Building

Discussion Session

R. C. Brasted, *Moderator*

7:30—9. The Word From Chemists on the Job.  
B. Spencer, B. D. Saxe, W. H. Brown.

7:35—Discussion.

7:50—10. Aims of Introductory Chemistry Courses. R. J. Ainsworth, E. B. Robertson.

7:55—Discussion.

8:10—11. Chemical Education and Non-Science Students: A Diverse Curriculum. T. L. Miller.

8:15—Discussion.

8:30—12. A Private Corporation; A College Chemistry Department; A New Answer. R. E. Bayer.

8:35—Discussion.

8:50—13. A Chemical Engineering View of Selected Industrial Processes as an Integral Part of Courses for Non-Science Majors.  
R. K. Blaine.

8:55—Discussion.

9:10—14. Guidelines for the Preparation and Continuing Education of High School Chemistry Teachers: A Progress Report.  
S. Kirschner, J. A. Young.

9:15—Discussion.

Chadbourne Hall

## TUESDAY MORNING

Chadbourne Hall

7:15-8:00—Breakfast

1351 F. Daniels Chemistry Building

W. T. Lippincott, *Moderator*

8:30—15. Catalytic Address III. The Chemistry Machine. K. R. Wilson.

9:20—Discussion

9:45—Coffee Break.

Lecture Session

R. C. West, *Moderator*

10:15—16. An Interdisciplinary Environmental Lab Program for General Chemistry.

R. D. Barnes, W. Keifer.

10:30—Discussion.

10:35—17. Chemistry of Man's Environment—A Cornerstone in Chemical Education: An Undergraduate Chemistry Teacher Training Program. U. Zoller.

10:55—18. An Introduction to Industrial Chemical Processes: An In-Depth Study Approach. W. E. Wesolowski, J. J. Hazdra.

11:10—Discussion.

11:15—19. Chemistry in the *Ascent of Man*. K. Brooks, J. Hostettler.

11:30—Discussion.

11:35—20. Energy; Or How to do Backward Somersaults on the Downhill Slide to Entropic Doom. J. W. Hill.

11:50—Discussion.

11:55—21. Lap Dissolve Slides: Multiple Use Formats for Pre-laboratory Instruction. E. Krakower, D. N. Harpp, L. W. Fine.

12:10—Discussion.

Chadbourne Hall

12:30-1:15—Lunch.

## TUESDAY AFTERNOON

Wisconsin Center

Exhibit Session

2:00-5:00—Exhibit paper authors are scheduled to be available as indicated by the letter designation following each paper number:

A. 2:00-3:30, Tuesday    C. 2:00-3:30, Wednesday

- 22 (A, C). *One Idea and One Truck after One Year: Problems Associated with Construction and Operation of a Cooperative Mobile Spectroscopy Laboratory.* T. D. Roberts.
- 23 (A, B). *Show It With "Cubelts": A Demonstration-Workshop Presentation.* G. O. Larson.
- 24 (C, D). *Survey of Paper Models for Molecular Structure.* G. O. Larson.
- 25 (B, D). *Molecular Models Exercises in Beginning Organic Courses.* J. U. Piper.
- 26 (B, C). *A Cheap "Molecular Model Kit" for Students.* B. D. Kybett.
- 27 (A, D). *Implementation of CHEM TIPS at South Dakota State University.* H. Gehrke, Jr.
- 28 (B, C). *CHEM TIPS in the University of Wisconsin System.* C. M. Lang, E. Larsen, S. Larson, R. Roskos, B. Z. Shakhshiri.
- 29 (A, C). *The Use of the TIPS Program in Teaching Introductory Organic Chemistry.* B. W. Ponder, R. H. Garner.
- 30 (A, C). *Hands-On Demonstration of Lap Dissolve and Other Techniques.* E. Krakower.
- 31 (A, D). *Out in the Open: A Non-Darkroom Photography Experience.* J. Copes.
- 32 (B, D). *Latent Image: Another Useful Gimmick.* W. D. Smith.
- 33 (B, D). *Interactive Audiovisual Self-Instruction Programs.* J. A. Bell, E. F. Rivenburgh
- 34 (A, C). *ACS Continuing Education: A Service to the Academic Community.* P. Morgan.
- 35 (B, C). *The University of Wisconsin-Madison General Chemistry Instructional Aids Program.* G. Dirreen, R. Schreiner, L. Williams, B. Z. Shakhshiri.
- 36 (A, D). *The Television Cassette Lecture/Discussion Program at the University of Illinois.* J. Enger, A. Toms-Wood, K. Cohn, G. P. Haight, Jr.
- 37 (B, C). *Project TEACH. Project TEACH Staff.*
- 38 (A, C) *Tutorial Assistance for Underachieving Students in Lecture Courses.* E. S. Kean.
- 39 (A, C). *Scientific Creativity: A Chemistry Course for Nonscience Majors that is Entirely-Laboratory.* C. W. J. Scaife.
- 40 (B, D). *Instructional Objectives in Chemical Education.* J. W. M.

- 41 (B, D). The Role of Chemical Analysis in the Interpretation of Water Quality.  
J. J. Delfino
- 42 (A, D). The Design of a Laboratory Program in Environmental Chemistry. C. Parravano.
- 43 (B, C). A Vocational Approach to Chemical Principles. M. C. Nagle.
- 44 (A, D). Chemistry for Artists and Art Buffs.  
A. A. Denio.
- 45 (B, C). Qualitative Analysis a la Periodic Table, Plus Miscellanea. R. Rich.
- 46 (A, C). A Computer-Based Information Search System for Organic Qualitative Analysis Using Wiswesser Line Notation. G. H. Coleman, L. T. Weston.
- 47 (B, C). The Use of Non-Interactive Computer Graphics in Chemistry Instruction. J. W. Moore, W. G. Davies, R. W. Collins.
- 48 (A, D). Ever-More-Sophisticated Lies About Bonding. W. G. Rhodes.
- 49 (B, D). A Novel Pictorial Approach to Teaching MO Bonding Concepts in Polyatomic Molecules. D. K. Hoffman, K. Ruedenberg, J. G. Verkade.
- 50 (A, C). Chemistry and the USA: Two Centuries in Parallel. J. E. White.
- 51 (A, C). The Uses of History in Teaching Chemistry: An Information Exchange and Workshop. A History of Chemistry "Happening." L. W. Fine.
- 52 (C, D). The Uses of History in Teaching Chemistry: Discussion with Colloquium Speakers. Room 205.
- 53 (A, C). Individualized Instruction with the PLATO IV System. S. G. Smith.
- 54 (A, C). The Computer as Tutor: An Application of Interactive Programming. G. E. Palmer.
- 55 (A, C). Qualitative Analysis Simulations.  
E. Bank.
- 56 (B, D). Computer Simulation of Acid-Base Indicator Behavior. J. Hefter, R. W. Zuehlke.
- 57 (A, D). Computer Modelling of Photochemical Smog Formation. B. J. Huebert.
- 58 (B, D). Invasion of the Body Snatchers.  
R. C. Messina, Jr.
- 59 (B, D). Computer Applications in Chemistry at Lawrence University. J. S. Evans.
- 60 (A, C). Interactive Computer Graphics for Chemists. M. D. Glick, T. J. Anderson

## Commercial Exhibits

Holt, Rinehart and Winston  
383 Madison Avenue  
New York, New York 10017

Displaying chemistry textbooks at introductory and advanced college levels.

Manufacturing Chemists Association  
1825 Connecticut Avenue, N.W.  
Washington, D.C. 20009

Information and nomination forms for 1977 Manufacturing Chemists Assn. high school, two year and four year college chemistry teacher awards; display and sample copies of MCA environmental newsletter and other education publications.

Perkin Elmer Corporation  
888 Thackeray Trail  
Oconomowoc, Wisconsin 53066

Spectrometers, Gas Chromatograph

Prentice-Hall, Inc.  
Englewood Cliffs, New Jersey 07632  
College Textbooks and Reference Models

Sargent-Welch Scientific  
7300 North Linden  
Skokie, Illinois 60076

Laboratory Equipment—pH Meters, Recorders, Balances, Spectrophotometers, Automatic Recording Titrators, Vacuum Pumps.

W. B. Saunders Company  
West Washington Square  
Philadelphia, Pennsylvania 19105

Current catalogs, texts, and related publications in the field of chemistry.

Science Related Materials, Inc.  
P.O. Box 1422  
Janesville, Wisconsin 53545

Molecular Models, Computer Charts, Giant-size Periodic Table, Safety Signs

John Wiley & Sons, Inc.  
605 Third Avenue  
New York, New York 10016

Reliance Glass Works, Inc.  
104 Gateway Road  
Bensenville, Illinois 60106

Scientific glassware and apparatus including  
micro-wave, solvent recovery systems.

Owens-Illinois, Inc.  
Kimble Laboratory Sales Division  
P.O. Box 1035  
Toledo, Ohio 43666

Glass and plastic, reusable and disposable  
labware, instrumentation.

5:30—Travel to Picnic at Picnic Point on Lake  
Mendota.

6:30—Picnic Dinner.

8:00-9:30—Return.

Chadbourne Hall

10:00—B-P-P.

### WEDNESDAY MORNING

Chadbourne Hall  
7:15-8:00—Breakfast

1351 F. Daniels Chemistry Building  
R. W. Collins, *Moderator*

8:30—61. Catalytic Address IV. General Syn-  
thetic Strategies and Their Applications in  
Computer-Assisted Synthetic Analysis.

W. L. Jorgensen.

9:20—Discussion.

9:45—Coffee Break

Bicentennial (USA)-Centennial (ACS) Feature  
The Uses of History in Teaching Chemistry  
L. W. Fine, *Organizer and Moderator*

10:15—Opening Remarks

10:20—62. Introduction. A. Ihde.

10:35—63. Exploration I. Why Chemistry  
Needs History. S. G. Brush.

10:50—64. Commentary I. J-C. Guedon.

10:55—Discussion.

11:00—65. Exploration II. Strategies for  
Teaching History of Chemistry. F. L. Holmes.

11:15—66. Commentary II. R. P. DeSieno.

11:20—Discussion.

11:25—67. Exploration III. Teach What to



- 11:40—68. Commentary III. O. B. Ramsay.  
11:45—Discussion.  
11:50—69. Exploration IV. Uses of History  
in Understanding the Encoding of Experi-  
ence. A Partial View: Science, Con-science,  
and Conscience. H. A. Bent.  
12:05—70. Commentary IV. A. T. Schwartz.  
12:10—Discussion.

Chadbourne Hall  
12:30-1:15—Lunch.

### WEDNESDAY AFTERNOON

Wisconsin Center  
Exhibit Session

2:00-5:00—See Tuesday Afternoon for listing  
of papers and time schedule.

Chadbourne Hall  
5:30—Dinner.

### WEDNESDAY EVENING

3650 Humanities Building  
Discussion Session  
D. W. Brooks, *Moderator*

7:30—71. Exercises in Teaching. E. Boschmann.  
7:35—Discussion.

7:50—72. A Cost-Effectiveness Study of Self-  
Paced vs. Traditional Instruction. S. R.  
Miller.

7:55—Discussion.

8:10—73. Use of the Library by Undergraduate  
Chemistry Students. H. P. Schultz.

8:15—Discussion.

8:30—74. Chemical Information in the Under-  
graduate College. I. The Role of Primary  
Journals in an Undergraduate College.  
T. M. Willard.

8:35—75. Chemical Information in the Under-  
graduate College. II. Access to the Chemi-  
cal Literature Through Abstracting and In-  
dexing Services. R. F. Copeland.

8:40—76. Chemical Information in the Under-  
graduate College. III. Acquisition of Copies

8:45—77. Chemical Information in the Undergraduate College. IV. The Role of the American Chemical Society and Its Publications. M. L. Good, R. Odette.

8:50—Discussion.

Chadbourne Hall

10:00—B-P-P

## THURSDAY MORNING

Chadbourne Hall

7:15-8:00—Breakfast

1351 F. Daniels Chemistry Building

R. W. Ramette, *Moderator*

8:30—79. The Chemistry of Color: An Orphan Neglected, Forgotten and Treated with Short Shrift. M. V. Orna.

8:35—Discussion.

8:50—80. Open-Ended Experiments in the Introductory Laboratory Program: Successful Examples and How to Use Them. D. MacInnes, Jr.

8:55—Discussion.

9:10—81. Teaching Organic Chemistry: The Challenges We Face. J. G. McGrew.

9:15—Discussion.

9:30—82. Isn't It Time to Systematize Acid-Base Chemistry? J. A. Laswick.

9:35—Discussion.

9:50—83. Balancing Equations by Simultaneous Equations: The Ease and Logic of It All. L. F. Druding.

9:55—Discussion.

10:10—84. Calculating with Clarity: A Case for SI Units and Quantity Calculus in Beginning Chemistry. W. G. Davies, J. W. Moore, R. W. Collins.

10:15—Discussion.

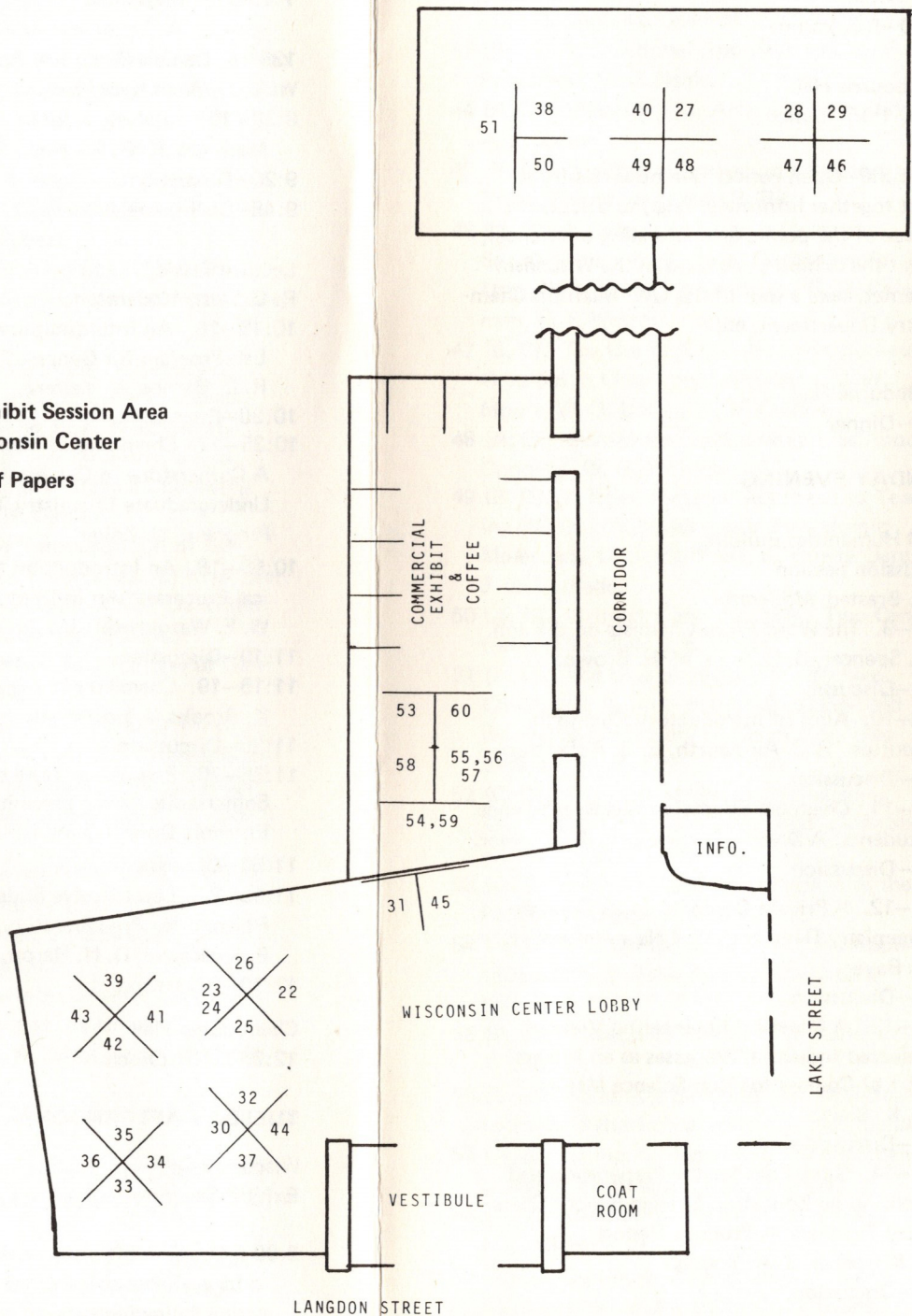
10:30—85. Catalytic Address V. Quo Vadis Chemical Education. G. P. Haight, Jr.

11:20—Discussion.

Chadbourne Hall

11:45—Lunch and Departure.

**Floor Plan  
for the Exhibit Session Area  
in the Wisconsin Center  
Location of Papers**



LANGDON STREET

LAKE STREET