

# CINTACS



Newsletter of the Cincinnati Section of the American Chemical Society

April, 2004  
Vol. 41, No. 7

## Meeting Calendar

<b>Thurs. Apr. 22</b>	Arthur Ford, USGS at NKU
<b>Fri. May 21</b>	Party Night! Melting Pot Restaurant

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## *Ice is Gneiss - Pronounced "Nice"*

Dr. Arthur B. Ford  
Retired Emeritus Research Geologist,  
U.S. Geological Survey

### Abstract

From his lengthy experience carrying out researches on rocks of Antarctica and Alaska, Dr. Ford will describe a geologist's unconventional view that glaciers, ice sheets and other polar ice forms consist of rocks of various types. A snowstorm is simply the falling of myriad hexagonal white minerals crystallizing from the atmosphere, not unlike formation of crystals from a solution as a laboratory beaker cools. (To be a "mineral," a crystal must have

*(Continued on page 5)*

### About the Speaker

Arthur Ford is not a chemist. He is Emeritus Research Geologist who retired from the U.S. Geological Survey (USGS) after more than 35 years, during which he undertook studies on the geology of Antarctica, Alaska and the Northern Cascades Mountains of Washington State. He grew up in the small town of Enumclaw,

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## **Jeff Lazar, Karen Conrad and Jennifer Blank Named Teachers of the Year!**

(see page 4 for details)

**THE CINTACS NEWSLETTER****Vol. 41, No. 7 April, 2004**

Editor.....Bruce S. Ault  
 Advertising.....Ed Hunter

CINTACS is published eight times a year (October through May) by the Cincinnati Section of the American Chemical Society. The submission deadline will be approximately August 1 for the September, 2004 issue. Electronic submission is strongly preferred, except for original photos. All materials should be sent to:

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**From the Chair**

In what has become somewhat of a tradition, our April meeting will again be held at Northern Kentucky University. This is the meeting where we honor K-12 students and teachers for outstanding achievements in chemistry. I would like to thank Jim Niewahner for making the NKU arrangements for the meeting.

The Awards Committee, chaired by Jim Hershberger, has chosen three teachers for recognition this year. Jeff Lazar of Walnut Hills High School is the High School Chemistry Teacher of the Year, the second year in a row that a WHHS teacher has won this award. Karen Conrad (Ross Local School District) is the Middle School Science Teacher of the Year, while Jennifer Blank of the Indian Hill Primary School is the Section's Elementary School Science Teacher of the Year. Congratulations to these three dedicated teachers for all they have done to improve science education in the Cincinnati area.

Our student awards fall into two categories. John Williams will present awards to outstanding high school students based on the Oesper and Chemistry Olympiad examination. And Richard Sunberg will recognize the winners of the Section's 2003 National Chemistry Week competition. I would like to thank both John and Richard for their hard work organizing these contests again this year.

The after-dinner speaker for this meeting will be Dr. Arthur Ford. Art is a retired geologist who is an expert on glaciers, ice sheets, and other forms of frozen water. Not only is he one of the few people who have visited both poles, but he has been to Antarctica dozens of times. He shares his expertise as a public lecturer on cruises to Alaska and similar climates, and as the author of the "Antarctica" article in the Encyclopedia Britannica. I'm sure we will catch his enthusiasm for the subject of "Ice is Gneiss" through some wonderful slides and will learn why he voluntarily leaves the climatic comfort of his home in San Diego for a trip each year to the "bottom of the world."

I would like to thank Bob Laughlin for his generous support as the sponsor of this meeting. It is appropriate that Bob be associated with this meeting, for two reasons. First, he is the person who struck up a friendship with Art Ford and identified him as a potential speaker for the Section. And second, preceding the April meeting will be a Colloid Chemistry Discussion Group with Dr. Carlos Co of the University of Cincinnati. The connection here to Dr. Laughlin is that Bob is a world-renowned surface and colloid chemist, for which he received the Cincinnati Chemist of the Year Award in 1985. Again, Bob, thanks for your sponsorship of this meeting.

Please take the time to read the articles elsewhere in this issue of CINTACS. For example, there are three other events of note this spring (in addition, of course, to the regular Section meetings). On

*(Continued on page 12)*

**April Meeting  
Wednesday, April 22, 2004**

**University Center  
Northern Kentucky University**

*Sponsored by Dr. Robert Laughlin*

**K-12 Students and Teachers Night**

**Program**

- 5:00 p.m. Colloid Discussion Group: University Center 108  
Professor Carlos Co, Dept. of Chemical and Materials Engineering, University of Cincinnati  
*Solid Microemulsion Glasses*
- 5:30 Registration: University Center, Second Floor Lobby Area
- 6:00 Banquet, University Center Ballroom, \$15.00 (\$8.00 for students, emeritus, unemployed and new members): Fruit Salad, Mixed Greens Salad, Oven-roasted Potatoes, Corn O'Brien, Oven-roasted Turkey, Vegetarian Lasagna, and Roasted Top Round of Beef, Rolls and Beverage, and Assorted Desserts
- 6:45 Keynote Speaker: Dr. Arthur B. Ford  
*Ice is Gneiss - Pronounced "Nice"*
- 7:45 Awards Presentations  
University Center Ballroom

**Dinner Reservations:** The meeting reservation form is online at <http://www.che.uc.edu/acs/cinacs.html>. This is the best and easiest way to register. As a lesser alternative, you may send your reservations by email to kim.carey@uc.edu. If it is absolutely impossible for you to make reservation via the internet, call 513-556-0293 (please leave name, affiliation, a contact phone number and state if you are in one of the ½ price categories). Deadline for reservations is Friday, April 16, at 5:00 pm.

**Directions:** From Downtown, or Cincinnati and northern Kentucky suburbs, take I-71 or I-75 or I-275 to I-471 South. Approximately six miles from the Downtown Cincinnati, I-471 ends as it merges with US27. At the second stop light turn right onto Nunn Drive, the entrance to Northern Kentucky University. From Nunn Drive turn left at the first traffic light. Go past the parking garage and turn right at the next stop sign. The University Center is the second building on the right. Guests may park in any unreserved parking space. (Do not park in Lot N as it is all reserved). Guests must have a handicapped parking sticker in order to park in a space for the handicapped.

## Lazar wins High School Teacher of the Year Award

The Awards Committee of the Cincinnati Section is pleased to announce that Mr. Jeff Lazar has been named high school chemistry teacher of the year for 2004. He is being recognized for his highly successful teaching activities at Walnut Hills High School, as well as his contributions to the chemical education community in Cincinnati.



Jeff grew up in Indianapolis and was graduated from Washington University in St. Louis in 1976 with an undergraduate degree in Biology. Following college, he studied plant biochemistry at the University of Maine in Orono for one semester, until the wind chill reached  $-75^{\circ}\text{F}$ . He then returned to St. Louis and worked in Biochemistry research labs at St. Louis and Washington Universities. Jeff earned an MAEd, concentrating on chemical education, from Washington University in 1988.

His first teaching job involved tutoring students in math at Paul Lawrence Dunbar Elementary in St. Louis. After earning teaching credentials, he taught Chemistry and Physical Science in a rural Missouri school district, and then in the University City School District in suburban St. Louis. In 1986, Jeff and his family moved to Cincinnati, where he taught Biology and Chemistry at Aiken High School. After one year at Aiken, Jeff moved to Walnut Hills High School, where he has worked for the past 17 years. Teaching responsibilities at Walnut Hills have included Eighth Grade Physical Science, General Chemistry, Honors Chemistry, and Advanced Placement (AP) Chemistry. In addition, Jeff has served as Science Department Chair since 1993.

Jeff is married (wife Linda works at Children's Hospital Medical Center) and has three children, two of whom have graduated from Walnut Hills.

Congratulations Jeff for this well deserved recognition!

## Conrad Wins Middle School Teacher of the Year Award

The Awards Committee is pleased to announce that Karen Conrad is the ACS Cincinnati Section's Middle School Science teacher of the Year 2004. Karen is a Science Teacher for grades 7 and 8 in the Ross Local School District. She engages her students with a dynamic classroom environment. Whether the activity is a single biology lesson on metamorphosis or a unit on the periodic table, Karen encourages to her students take the lead and construct their own understanding through hands on lessons and independent experiments. Karen views herself as the "navigator guiding students through a learning process, rather than being the process itself". One member of our Section recently visited Karen's class to discuss science careers and was pleased to encounter a completely engaged group of young men and women. Our colleague comments that it is especially unusual to find young women of middle school age who are comfortable discussing science careers with a group of their peers! When Karen isn't coaching Science Olympiad teams or helping students prepare for Science Fair competitions, she enjoys camping and traveling with her family.



Congratulations Karen for this well deserved recognition!

## Blank Wins Elementary Science Teacher of the Year Award

The Awards Committee is pleased to announce that Jennifer Blank has been selected as the Cincinnati Section's Elementary School Science Teacher of the Year 2004. Jennifer teaches First Grade at Indian Hill Primary School. Teaching a hands-on exploratory science curriculum, Jennifer incorporates writing, reading, listening, reasoning, research, and the

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formed naturally.) Crystals pile up in banks of white “sediments” often driven by currents of wind, not unlike piles of sediments on a lake or ocean floor. In alpine and polar regions the minerals—snowflakes—accumulate in thickening piles that gradually change form and recrystallize at depth during flow under gravity. Thus, a snowpile changes eventually into a rock, of a class geologists term “metamorphic.”

Glacier ice commonly has a banded structure shown as dirt bands and thus it is a rock termed “gneiss.” More specifically, in the manner of naming more traditional rocks after a principal mineral as modifier—“biotite granite,” “biotite gneiss,” or “quartz sandstone”—these glacier rocks can be termed “ice gneiss.” Next winter in a Cincinnati snowstorm, envision yourself in nature’s cooling atmospheric beaker, as beautiful white, hexagonal minerals fill the sky to pile up on your roofs and streets. Lucky, these sediment piles won’t transform into rocks; not yet, that is, until arrival of our next Ice Age.

*(Continued from page 1)*

WA, near the base of the United States’ greatest volcano, Mount Rainier, which he climbed soon out of high school and on which he learned a love of ice and glaciers and how they work. He went on to earn his PhD degree in 1959 for the first studies ever made of the active, 10,000-foot high volcano Glacier Peak and its underlying rocks in a remote part of the North Cascades of Washington State. He attained the summit of this relatively little-climbed volcano five times on various routes during his studies. As a graduate student, he taught labs and in 1958 went on to an academic career as Assistant Professor of Geology at San Diego State College (now University).

He loved the academic environment, but in September 1960 he couldn’t resist an offer to join a USGS expedition into mountains never-before visited near the South Pole. He made a career change, deciding that he would rather do geology than talk about it. It was a difficult choice, but he took a chance that affected the remainder of not only his own life but those of his incredibly tolerant wife, Carole, and two daughters who had to grow up with a father so often away on polar expeditions.

Most recently, Dr. Ford with colleagues has been working on a new interpretation of the “Denali Fault” in the great Alaska Range near Mt. McKinley (Denali National Park). His nearly 200 publications on his research include geological maps of various mountain areas in Antarctica and Alaska, as well as a chapter in the book “Geology of Antarctica,” and the major chapter “Antarctica” in the current edition of Encyclopedia Britannica. Since retirement, he has traveled as a lecturer on ships to Antarctica, Alaska and the Arctic, including Spitzbergen, eastern Siberia, the Northwest Passage and the North Pole. He is among the relatively few people who have visited both geographic poles. Dr. Ford is a member of the American Geophysical Union and a fellow of the Geological Society of America, the Explorers Club, and the Royal Geographical Society.

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use of technology. She works to create a student led culture of learning. For example, a unit on insects has included observing life cycles of several insects in the classroom, recording observations to collect data to make comparisons, hosting a visit from “Mrs. Science” (a chemist) who helps the students perform experiments including chemiluminescence in lightning bugs, internet research, books on the study of selected insects, and fiction with a focus on insects. One recent “Mrs. Science” reports that in January 2004 first graders provided the following questions and comments: “I think a scientist is a lot like a detective - that’s cool!”, “I accidentally drew 8 legs on my insect instead of 6 - that would make it a spider, not an insect, right?”, and “Can’t slime have properties of both a solid and a liquid? I think it does.”



Congratulations to Jennifer Blank on this award. Thank you, Jennifer for planting the seeds of scientific curiosity in the minds of our children!

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## Colloid Discussion Group

### *Solid Microemulsion Glasses*

Dr. Carlos Co  
University of Cincinnati

#### Abstract

Complex fluids comprising of oil, water, and surfactant form a rich variety of self-assembled structures that have made them the subject of great scientific and practical interest. Surfactant self-assembled structures have been used extensively, for example, in the *directed* synthesis of many inorganic and organic materials. In almost all cases however, the rapid rearrangement of the surfactant template precludes exact *one-to-one* copying of the template. Thus, while materials synthesized through *directed* template synthesis are novel and useful, the inability to predict the structure of the final material is unsatisfying.

Recently, we have discovered that by replacing *water* in these complex fluids with *glassy sugars*, solid complex glasses can be formed. These complex glasses retain many properties of classical complex fluids and have separate nanometer-size, self-assembled domains of glassy sugar and liquid oil. However, their solid-like characteristics make them more suitable for *one-to-one* template polymerizations and a host of other applications such as encapsulation and controlled-release. This presentation will focus on the phase behavior and physical properties of polymerizable solid microemulsion glasses containing equal amounts of sugar and liquid monomer.

#### About the Discussion Group Leader

Carlos Co is an assistant professor in the Department of Chemical and Materials Engineering at the University of Cincinnati. He received his B.S. degree in Chemical Engineering/Chemistry at the University of British Columbia in 1995, and his Ph. D. in Chemical Engineering from the University of Delaware in 2000. Professor Co has research interests in the areas of polymerization processes in complex fluids and at interfaces; microemulsification of triglycerides, pharmaceuticals, and proteins; nanocomposites; and molecular engineering and synthesis of surfactants

## Nominations for Service Award Sought

Nominations are requested for the Cincinnati Section's Outstanding Service Award to be presented by the Section at the May Meeting. A one-page letter of nomination is required. The letter should contain a statement describing why the nominee is deserving of the award, and must also include contact information for the nominator and the nominee. In addition, a one-page letter seconding the nomination is required. The nomination and the seconding letter should be sent to Jim Hershberger, Department of Chemistry, Miami University, Oxford, OH 45056 (phone 513-529-2441, fax 513-529-1675, email [hershbjw@muohio.edu](mailto:hershbjw@muohio.edu)). The deadline for nominations is Fri., April 30, at 5:00 pm.

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## Cincinnati Section now Incorporated

We received word that the Initial Articles of Incorporation for the Section were received and approved by the Ohio Secretary of State on March 2, 2004. This should help with IRS filings and other instances where we need documentation that we are a non-profit organization.

The incorporation document may be found by searching the documents section of the Secretary of State at <http://www.state.oh.us/sos/> for Cincinnati Section American Chemical Society.

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## Cincinnati Section Meeting Sponsors 2003-2004 Program Year

October 10: University of Cincinnati, Department of Chemistry  
November 12: Advanced Testing Laboratory  
December 10: Procter and Gamble Pharmaceuticals  
January 14: The Procter and Gamble Company  
February 25: Givaudan Flavors  
March 24: Marshall Wilson  
April 22: Robert Laughlin  
May 21: Rick Fayter

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## Items of Interest for Chemical Educators

The 18<sup>th</sup> Biennial Conference for Chemical Education (BCCE) will be held on July 18-22 at Iowa State University in Ames, Iowa. This is a wonderful professional development opportunity. To learn more about this conference, visit the website at [www.chem.iastate.edu/bcce](http://www.chem.iastate.edu/bcce) or e-mail [bcce@iastate.edu](mailto:bcce@iastate.edu).

The last round of educational grants for this school year are due by May 1. Grants are awarded to educators for such activities as attending workshops or conferences like the BCCE, innovative educational programs, participation in summer research programs, and instructional equipment. The application can be found in the October 2003 CINTACS or on the section website. Questions should be directed to Brian Berning at [Brian.berning@7hills.org](mailto:Brian.berning@7hills.org).

Nobel-Prize winner, Dr. Stanley Prusiner, will be speaking at Walnut Hills High School on Wednesday, April 21, at 7:30 PM. Dr. Prusiner was awarded his Nobel Prize in Medicine in 1997 for his discovery of prions, a "new genre of disease-causing agents" that have been linked to brain disorders such as Alzheimer's and Parkinson's diseases. The lecture costs \$15 for adults and \$5 for students. This is an excellent opportunity to have your students hear the scientific message of a great scientist. You can make reservations by calling the Walnut Hills Alumni Foundation at 513-363-8500.

Linda Ford is looking for hosts for the meetings of the Chemical Educators' Discussion Group for the 2004-05 school year. Please volunteer your classroom by contacting Linda at [Linda.ford@7hills.org](mailto:Linda.ford@7hills.org).

**Visit the  
Section's Home Page**

<http://www.che.uc.edu/acs>

## YCC Career Conference a Great Success!

The Younger Chemists Committee sponsored the Chemistry Career and Job Search Conference held at Xavier University on Saturday, February 28. We had a morning working presented by Dr. Richard Bretz from ACS Career Services, two afternoon panel discussions with local "hirers" (people who often hire and recruit for local companies) and "hires" (people who recently started in new positions here in Cincinnati). In addition, recruiters from local technical placement agencies were available at lunch to meet with job seekers about work currently available. Approximately 40 people attended from a variety of universities and companies. A great deal of very helpful information, hints, and suggestions for interviewing, resume preparation, and networking was shared. Thank you to those who helped out with organizing and presenting and to those who spread the word to others, contributing to a terrific turnout.

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## Younger Chemists Committee: Our Next Happy Hour Event, Tuesday April 13

YCC is hosting a Happy Hour with FREE FOOD AND DRINKS from 6-8 PM on Tuesday, April 13 at Arthur's in Hyde Park (Edwards Rd, near Hyde Park Square). If you are a YCC type (chemist or soon-to-be chemist age 35 and under), join us at Arthur's for BURGER MADNESS (or any of the other Arthur's delectables) and socializing. Come hang out and meet some very cool folks. If you know of others who fit the YCC description, please tell them and/or bring them along to the event. For more info or questions, contact YCC Chair, Joy Henderjson at [henderj@barrlabs.com](mailto:henderj@barrlabs.com), 513-731-9900 x 87227.

**Last Chance to Register...****Pharmacology for Chemists**

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- Improve your ability as a chemical scientist to interact with pharmacologists in research pursuits
- Be exposed to the status of contemporary pharmacologic thought and drug therapy - where progress is being made and where advances will likely be made

**About the Instructor**

Joseph G. Cannon, Emeritus Professor of Medicinal Chemistry, University of Iowa, is the author or co-author of more than 200 articles in organic chemistry, medicinal chemistry, and pharmacology. He is one of the highest rated instructors in the ACS Continuing Education program and is the recipient of the Smissman-Bristol-Myers-Squibb Award sponsored by the ACS Division of Medicinal Chemistry.

**General Concepts and Principles of Pharmacology**

## Definitions

Survey of appropriate literature of pharmacology

Membrane models, ion channels, structure of liquid water, implications to pharmacology

Absorption and distribution of drugs: active and passive transport

Blood-brain barrier

Drug metabolism, storage, and excretion

Enzyme induction

Drug-receptor interactions

Theories of drug activity

Introduction to pharmacokinetics

**Nervous System****Anatomy and physiology of the nervous system****Nerve impulse transmission****Autonomic nervous system**

Autonomic physiology and pharmacology

Noradrenergic system: receptors, agonists, antagonists, mixed acting drugs

Dopaminergic system: physiology, Parkinsonian syndrome

Cholinergic system: receptors, agonists, antagonists, acetylcholinesterase inhibitors, Alzheimer's syndrome, other forms of cognitive dysfunction

**Central nervous system drugs**

Definitions

Aspects of CNS anatomy and physiology


Neurotransmitters and receptors

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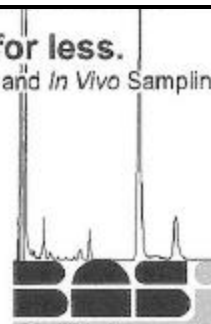


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Antidepressants  
Antianxiety agents  
Mood stabilization  
Antipsychotics  
Sedatives and related agents

#### **Analgesics and related agents**

Definitions, testing methods  
Placebo effect  
Antiinflammatory analgesics: the inflammatory response, role of prostaglandins, survey of drugs in this category  
"Coal tar" analgesics, possible mechanisms of action, metabolic aspects, toxicity  
Opioid analgesics -survey of chemical types, "MPTP," receptors, mechanisms of actions, endogenous peptide analgesics

#### **Cardiovascular Agents**

Aspects of cardiovascular anatomy and physiology

##### **Hypertension**

Physiology of blood pressure regulation  
Renin/angiotensin system  
Antihypertensive drugs: physiology and pharmacology

##### **Arrhythmias**

Aspects of physiology

Agents used: pharmacological mechanisms  
Physiology of muscle fiber contraction  
Ion channels  
Myocardial ischemia (angina pectoris)  
Physiological aspects  
Drugs employed

**The course fee will be \$800 (ACS members) and \$900 (non-ACS members)** and includes all course materials, continental breakfast, lunch, refreshment breaks for all 3 days (**compare to \$1,345 and \$1,445 at ACS National meeting or Pittcon**). Please call Rick White at 513-622-1624 to confirm your registration and arrange to have check or money order (Sorry, we cannot accept credit cards) sent to: (Please make check payable to "Cincinnati Section ACS") **Deadline for receipt of payment is Monday, April 26.**

D. Rick White  
The Procter & Gamble Co.  
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**Registration Deadline: Friday, April 30**

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*(Continued from page 2)*

April 13, the Younger Chemists Committee will host a Happy Hour at Arthur's in Hyde Park. On April 21, Nobelist Dr. Stanley Prusiner will be speaking at Walnut Hills High School, his alma mater. And at the end of May, the Section will host an ACS Short Course on Pharmacology for Chemists.

Meanwhile, we look forward to seeing you on April 22.

Joel Shulman, Chair

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