



Double Bond

The Newsletter of the Western New York Section of the American Chemical Society

Volume 83

March 2011

THE 2011 SCHOELLKOPF MEDAL

Nominations for the 2011 Schoellkopf Award will be accepted through May 15, 2011

The Jacob F. Schoellkopf Medal is the oldest award of the American Chemical Society given by a Local Section. The purpose of the award is to recognize a person who has fostered the objectives or activities of the American Chemical Society. The medalist's contribution might be a discovery pertaining to chemistry, or an invention of a plan, process, or device, useful, valuable, or significant in the theory or practice of chemistry, or distinguished service to the Western New York Section. The nominee's work must have been performed in Western New York.

Please consider nominating one of your colleagues for this prestigious award. Any nominations received after the May 15 deadline date will be considered for next year's award. Nominations should include a letter stating the candidate's contributions and a recent CV of the candidate. Additional letters (at least 2) supporting the nomination are an important factor in awardee selection.

This year's Schoellkopf committee chair is Dr. Bernard Pointner. For further information you may contact the chair directly at (716) 827-1415 or Bernard.Pointner@Honeywell.com.

Please email all nominating documentation for the 2011 Schoellkopf Award (as Adobe PDF files) to:

Dr. Mary O'Sullivan
Secretary, WNY Section ACS
osulliv1@canisius.edu



2011 UNDERGRADUATE SYMPOSIUM

The Western New York section of the American Chemical Society will sponsor the 2011 Western New York Undergraduate Research Symposium this spring! This event is being co-hosted by the University at Buffalo ACS Student Chapter and the Department of Chemistry at the University at Buffalo. Researchers and faculty mentors are invited to join us for an exciting program, and to share your research efforts with your peers.

This year's symposium will feature a keynote address by Prof. Timothy Swager from MIT and two \$200 prizes for the best student presentations will be given. In addition, we will be welcoming informational and recruiting representatives from businesses and chemistry graduate programs in our area. Students can take advantage of these networking opportunities as they look forward to life after their undergraduate days.

There is a registration fee of \$5.00 associated with the symposium, which includes lunch. Students who wish to present a poster or a 15 minute talk at the symposium should indicate this on their registration form and should submit an abstract using the Abstract Template. These forms are available on the WNYACS website:

wny_sites.acs.org/undergradsymposium.htm

If you have questions, please contact the 2011 Symposium Chair:

Dr. Javid Rzayev
jrzayev@buffalo.edu
(716) 645-4314.



60 YEARS AGO IN THE DOUBLE BOND

The following excerpt appeared in the February, 1941
Double Bond

THE REMOVAL OF ODOR FROM LIMBURGER CHEESE

By CLAYTON C. SPENCER

The object of this research was to investigate:

- A. The cause of the odor of Limburger cheese.
- B. The properties of the same.
- C. Methods whereby said odor might be removed, displaced, destroyed, killed, or otherwise obliterated.

It was hoped that this work might lead to a method of making ordinary limburger cheese more pleasing and palatable to a greater number of people than at present enjoy this delicacy, thereby increasing its sale. The possibilities were p-eat. After the odor had been removed, it was proposed to mix the cheese with flavors more desirable than the original one, such as peppermint, clove, garlic, or turpentine; thus each person could express his individuality in terms of the flavoring he preferred in Limburger cheese. A great deal of publicity was given the preliminary report of this work and the author received many interesting letters, a few of which are quoted below to show the national interest and importance of the work. One man wrote-

"Wishing you success in your undertaking."

Another-

"My wife must have her Limburger cheese. Please send me a sample of your smell-less cheese and salvage a wrecked home."

Still another-

"My doctor tells me that Limburger is the only thing." that will save my life, but to save my life, I can't get it down."

On the other hand, the fundamentalists objected strenuously as follows:

Dear Sir:

Reading in the *Blatt* of your proposed attempt the original flavor of cheese by other odors to substitute, I wish a hearty protest against such an undertaking in behalf of the Associated Limburger Cheesers to register. The reasons for this protest many are, but still yet however I will herein only a few give. . The Bible in two places in my favor offers evidence. "In the beginning God created Heaven and Earth and all things therein and it was good." Also we find "What God hath joined, let no man put asunder."

Among the many hundred thousand other reasons, the present flavor of Limburger is by far the best flavor. This was by a vote at our last meeting determined.

Hoping you will your efforts desist,
Respectfully, W. Schmidt

The literature on this subject was very meager. The cheese was first mentioned in the Cheeser's *Jahresberichte*, 3, 1323, 1621, by a certain Heinrich von Limburger, after whom the product was named. It seems that he discovered this substance by accident while working on: The Action of a Shovel on a Manure Pile. Some milk curds had been thrown away by the dairy maid, and had lain there some time. Herr Limburger attributed his discovery to his keen sense of smell. The compound remained a chemical curiosity for many years, and, during this time, was known as Limburger's reagent. The properties noted in the earliest journals include its characteristic odor and its low melting point.

Scheele, the indefatigable worker, was the first to observe that Limburger's reagent was isomeric with other cheeses and, therefore, should be classed as a cheese.

No record was found of any attempt to identify or measure the odor; accordingly, the first experiments attempted in this laboratory were to develop an odorimeter .

The principle of the Bunsen photometer was first tried. One gram of Limburger cheese was placed on a table in the center of the room. Varying amounts of corn beef and cabbage were boiled in 500 cc of water near the cheese. When an impartial observer could no longer detect the odor of the cheese, this was called the end point. The results were not satisfactory because:

- A. Lack of standard corn beef and cabbage.
- B. Lack of an impartial observer.

The method finally adopted was to place a sample of the cheese on the table at one end of a long room, cover with an air tight glass cover, then wait until the room had returned to equilibrium. Difficulty was experienced at this point due to the failure of material previously considered impervious to hold in this odor.

When the room had regained its composure, the glass cover was removed by a system of pulleys, relays, and electrical contacts, and the observer approached the cheese quietly so as not to disturb it or cause air currents. The distance at which he first smelled the cheese was recorded. This figure after being corrected for temperature, pressure, humidity, personal equation, and so forth, and then divided by the weight of the cheese in grams, was called sigma, the coefficient of smellability of the cheese.

For a sample of American-made cheese, the results fall on a straight line, and therefore sigma, the coefficient of smellability, is a constant. For a sample of German- made cheese, this curve approaches infinity.

It was not possible to see if it ever reached infinity, because the last point on the curve, at 100 feet, happened to be the police station, and when they reported the observation, they also requested that future work along this line be suspended.

The next experiment was to measure the smell pressure of the cheese; this was possible by taking advantage of thermodynamics. It is well known that

$$F = -RT \ln a_1/a_2$$

for a reaction $A \rightarrow B$ where F is the useful work done by the reaction, R and T are well-known symbols, a_1 is the activity of the odor, and a_2 is the activity of the cheese. Since the cheese is a solid, its activity is 1. At low pressure, the activity of the odor is practically equal to the smell pressure, a_2 , therefore

$$F = -RT \ln \text{smell pressure}$$

F can be measured as follows: The observer goes into a room in which there are several unsuspecting people. He has in his pocket a known weight of cheese. The sum of the weights of the people who leave the room in the first ten minutes equals the number of foot pounds of work done; this can be changed to appropriate units and used in the above equation which is then solved for the smell pressure. This pressure proved to be very large.

The odor of the cheese was found to be soluble in concentrated ammonia, at least when the cheese was saturated with concentrated ammonia, the odor practically disappeared. After standing a short time the odor returned.

The rate at which the odor returns was measured by the odorimeter and the following results obtained:

<i>Time (min)</i>	<i>Odorimeter (feet)</i>	<i>k calculated for monomolecular reaction</i>
0	0	
1	12	
2	28	0.168
4	47	0.159
7	70.5	0.174
11	84.8	0.171
13	89.9	0.169

The k is so near constant that the author feels justified in assuming that the reaction is monomolecular.

10.0371 grams of cheese was placed in a vacuum desiccator and a pressure of .138 mm. Hg was maintained for three weeks. At the end of this time the odor was again measured and was found not to have changed. The weight of the cheese was now 10.0370 grams. The loss of .0001 grams indicates very clearly that the odor has weight.

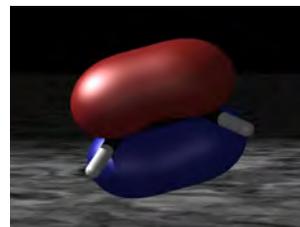
All of the above data seems to show that Limburger cheese is a polymer of the odor and that the reaction Cheese = Odor is constantly at equilibrium. Consequently, it would be impossible to separate the odor from the cheese, without removing the cheese also.

SUMMARY

A. Limburger cheese is found to be solidified smell.

B. It is impossible to remove the odor from Limburger cheese.

The experimenter, while realizing the scintillating brilliancy of the above observations, desires most emphatically to wash his hands of the whole matter, and will not be held further responsible.



WNYACS Officers & Staff**Chair 2011**

Jeffrey Rose
DuPont
(716) 827-1415 (w)
jmr222@mac.com

Chair Elect 2011

Ronny Priefer
Niagara University
(716) 286-8261 (w)
rpriefer@niagara.edu

Vice-Chair 2011

Timothy Gregg
Canisius College
(716) 888-2259 (w)
greggt@canisius.edu

Secretary 2011-2012

Mary O'Sullivan
Canisius College
(716) 888-2352 (w)
osulliv1@canisius.edu

Treasurer 2010-2011

Andrew Poss
Honeywell
(716) 827-6268 (w)
andrew.poss@honeywell.com

Councilor 2011-2013

Peter Schaber
Canisius College
(716) 888-2351 (w)
schaber@canisius.edu

Councilor 2010-2012

David Nalewajek
Honeywell
(716) 827-6303 (w)
david.nalewajek@honeywell.com

Newsletter Editor

Timothy Gregg
Canisius College
(716) 888-2259 (w)
greggt@canisius.edu

Schoellkopf Award 2011

Bernard Pointner
Honeywell
(716) 827-1415 (w)
Bernard.Pointner@Honeywell.com

Education Committee

Ronald Spohn
Praxair
(716) 879-2251 (w)
ronald_spohn@praxair.com

Chemistry Olympiad

Mariusz Kozik
Canisius College
(716) 888-2337 (w)
kozik@canisius.edu

National Chemistry Week

David Nalewajek
Honeywell
(716) 827-6303 (w)
david.nalewajek@honeywell.com

Senior Chemists

Joseph Bieron
Canisius College
(716) 888-2357 (w)
bieron@canisius.edu

Member-at-Large South 2011-2012

William Sullivan
Praxair
(716) 879-7794 (w)
william_sullivan@praxair.com

Member-at-Large North 2010-2011

Vacant

Newsletter Assistant Editor

Alice Steltermann
Canisius College
(716) 888-2340 (w)
stelterm@canisius.edu

ISSUE COPY DEADLINE: FIRST OF MONTH PRIOR TO PUBLICATION

The Western New York Section of the American Chemical Society (ACS) and its editors assume no responsibility for the statements and opinions advanced by the contributors. Views expressed in the editorials are those of the authors and do not necessarily represent the official position of the Western New York Section of the American Chemical Society. All materials to appear in the next issue of *Double Bond* must be received by the editor, in care of the Dept. of Chemistry and Biochemistry, Canisius College, 2001 Main Street, Buffalo, New York 14208, by the FIRST day of the month. Notice for change of address should be made through ACS Member and Subscriber Services at (800) 333-9511, <mailto:service@acs.org> or the website: portal.acs.org/portal/PublicWebSite/contact/WPCP_007970.

The *NF=B Double Bond* (aka *Double Bond*) is published from September through June by the WNY Section of the ACS. Contact information: email: dbbond@canisius.edu; website: wny.sites.acs.org. Member subscriptions are included in the annual National ACS dues. Permission to reprint is granted for this publication.
