

Citation for Chemical Breakthrough Award Program Update for 2014

Jeffrey I. Seeman
Award Committee Secretary

August 5, 2015

Summary

- Nine years of completed awards (2006 –2014).
- 49 CCB Awards presented to date.
- 2015 award program shall begin in August 2015.
- CCB Awards are plaques only, given to institution from which the research was published
- We provide assistance with and sometimes participation in award ceremonies.
- At least three award ceremonies were held in the last 12 months
 - Avery, MacLeod and McCarty with John Sharkey at Rockefeller University
 - Sinin at Kazan Federal University with David Lewis
 - Soddy in Glasgow with Robert Anderson
- Several award ceremonies for 2015 are in the planning stages.
- A number of feature articles on the program have appeared in C&EN. See, for example:

The 2014 awards are listed in the graph below, taken from the CCB Award web site that is housed on the HIST website that is designed and maintained by Vera Mainz.

From the HIST website:

Citations for Chemical Breakthrough Awards

2014 Awardees

NOTE: Text in **COLOR** indicates a "live" link.

Scientists/Inventors	Breakthrough Publication (If text is in color, this is a live link to the plaque.)	Location of Award (If text is in color, this is a live link to photographs and other materials related to the presentation.)
N. Bartlett	" Xenon Hexafluoroplatinate(V) $Xe^+[PtF_6]^-$," <i>Proceedings of the Chemical Society</i> , 1962 , 6, 218.	The University of British Columbia
E. Fischer	" Ueber die Configuration des Traubenzuckers und seiner Isomeren ," <i>Chemische Berichte</i> , 1891 , 24, 1836-1845.	University of Würzburg
L. Michaelis and M. L. Menten	" Die Kinetik der Invertinwirkung ," <i>Biochemische Zeitschrift</i> , 1913 , 49, 333-369.	Vivantes Klinikum Am Urban, Berlin
J. D. van der Waals	" DE CONTINUITEIT VAN DEN GAS-EN VLOEISTOFTOESTAND ," Ph.D. thesis, University of Leiden, 1873 .	University of Leiden

The 2014 award plaques are shown below. All plaques are also found on the HIST website under HIST Awards, Citation for Chemical Breakthrough Award.



Division of the History of Chemistry
American Chemical Society

Citation for Chemical Breakthrough



Discovery of the First Noble Gas Compound

Proceedings of the Chemical Society 1962, 6, 218.

Xenon Hexafluoroplatinate(v) $\text{Xe}^+[\text{PtF}_6]^-$

By NEIL BARTLETT

(DEPARTMENT OF CHEMISTRY, THE UNIVERSITY OF BRITISH COLUMBIA,
VANCOUVER 8, B.C., CANADA)

Tensimetric titration of xenon (AIRCO "Reagent Grade") with platinum hexafluoride has proved the existence of a 1:1 compound, XePtF_6 . This is an orange-yellow solid, which is insoluble in carbon tetrachloride, and has a negligible vapour pressure at room temperature. It sublimes in a vacuum when heated and the sublimate, when treated with water vapour, rapidly hydrolyses, xenon and oxygen being evolved and hydrated platinum dioxide deposited:



Presented to The University of British Columbia, 2014.



Division of the History of Chemistry
American Chemical Society

Citation for Chemical Breakthrough



Discovery of the structure of the sugars

Chemische Berichte, 1891, 24, 1836-1845.

285. Emil Fischer: Ueber die Configuration des Traubenzuckers und seiner Isomeren.

[Aus dem chemischen Laboratorium der Universität Würzburg.]

(Eingegangen am 6. Juni.)

Für die Verbindungen der Hexosegruppe ergeben sich denn, wie leicht ersichtlich, folgende Configurationen:

Aldosen: $\text{COH} \cdot \text{CH}(\text{OH}) \cdot \text{CH}(\text{OH}) \cdot \text{CH}(\text{OH}) \cdot \text{CH}(\text{OH}) \cdot \text{CH}_2\text{OH}$

d. Glucose	—	+	+	+
l. Glucose	+	—	—	—
d. Galose	+	+	+	—
l. Galose	—	—	—	+
d. Mannose	+	+	+	+
l. Mannose	—	—	—	—

Für die Galactose bleibt noch die Wahl zwischen vier Configurationen, wie aus dem Vergleich mit den Formeln der Schleimstärke und Allochleimstärke hervorgeht.

Ketosen: $\text{CH}_2\text{OH} \cdot \text{CO} \cdot \text{CH}(\text{OH}) \cdot \text{CH}(\text{OH}) \cdot \text{CH}(\text{OH}) \cdot \text{CH}_2\text{OH}$

d. Fructose	+	+	+
l. Fructose	—	—	—

Presented to the University of Würzburg, 2014.



Division of the History of Chemistry
American Chemical Society

Citation for Chemical Breakthrough



Discovery of the relationship between substrate concentration and
enzymatic velocity.

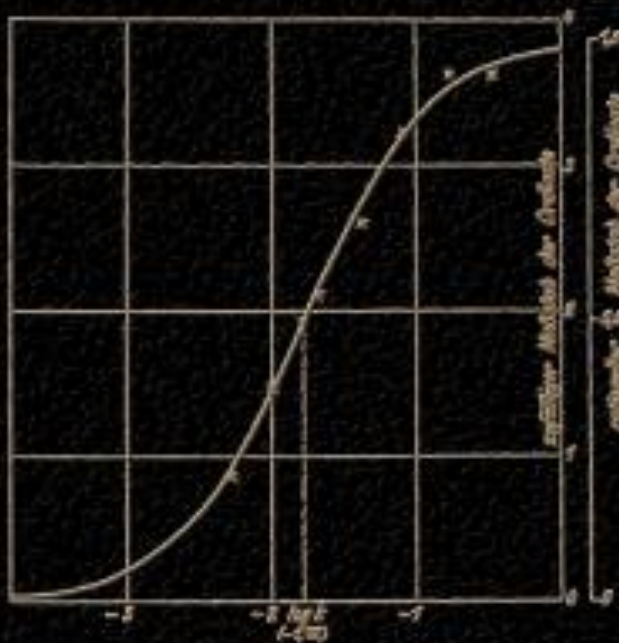
Biochemische Zeitschrift, 1913, 49, 333-369.

Die Kinetik der Invertinwirkung.

Von

L. Michaelis und MIS Maud L. Menten.

(Eingegangen am 1. Februar 1913.)



$$v = \sigma \cdot \phi \cdot \frac{[S]}{[S] + k}$$

Presented to Vivarium Klinikum Am Urban, 2014.



Division of the History of Chemistry
American Chemical Society

Citation for Chemical Breakthrough



Discovery of an Equation of State for a Fluid.

OVER
**DE CONTINUITET VAN DEN GAS- EN
VLOEISTOFTOESTAND.**

ACADEMISCH PROEFSCHRIFT,
OP VERZOEKING VAN DEN ERZELDE TITEL
DOCTOR IN DE WIS- EN NATUURKUNDE,
AAN DE HOOGESCHOOL TE LEIDEN,
OP GEGAGT VAN DEN ERZELDE FACULTEIT
D^r. M. DE VRIES,
Hoogleraar in de Faculteit der Wetenschappen te Leiden,
OP ZATERDAG DEN 16^{den} JULI 1873, TER NABIZIJDE VAN DE ERZELDE,
IN HET OPENBAAR TE VERDEDIGEN

JOHANNES DIDERIK VAN DER WAALS,
GEBOREN TE LEIDEN.

LEIDEN,
A. W. SUTHOFF.
1873.

Presented to Universiteit Leiden, 2014.

The members of the 2014 Award Committee are listed below and also on the HIST website (with the Award Committee members from the first award year).

Award Committee Members

2014

Anthony G. M. Barrett, F.R.S. (Imperial College of Science, Technology and Medicine)

Michael Bowers (University of California, Santa Barbara)

Carmen Giunta (Le Moyne College)

Harry Gray (Caltech)

Dudley Herschbach (Harvard)

Peter Morris (Science Museum London)

Amos Smith (Penn)

Joanne Stubbe (MIT)

Jeffrey I. Seeman, Committee Secretary (Non-voting)(University of Richmond)

- The program has received excellent responses in the USA and Europe. To date, no awards have been presented to Asia or South America.
- Announcements of the call for nominations and of the awardees appear regularly in C&EN.
- The plaque-design process is much more difficult than anticipated. It is often hard to obtain the required high quality scans of original publications from the 19th Century. There have been design issues with the recipient organizations.
- We have received extraordinary cooperation from the plaque manufacturer, Stellar Kent (<http://www.stellarkent.com/index.php>). In fact, in 2014, HIST Certificate of Appreciation Awards were given to Carol Hall, Linda Mason, and the Stellar Kent Corporation for their work on the CCB award program. See photographs below.



Photographs taken at the HIST Certificate of Appreciation award ceremony for Stellar Kent, the manufacturer of the CCB Award plaques since the program inception. Left: Elizabeth Amin, HIST representative; Linda Mason, graphic artist; Marc Hagberg, graphic artist; and Linda Hall, president of Stellar Kent. Right: One of the award plaques.

Finances and Donations

- The plaques cost ca. \$350 each including shipping to the USA. Shipping to Europe is another \$100 and sometimes considerably more than \$100 depending on location.
- Initial funding
 - \$10K from ACS DAC Innovative Grant
 - \$10K from ACS Corporate Associates
 - \$6K from ACS DAC Innovative Grant for Local Section travel
 - Funds from individual donors (which continues to this day)
 -
- HIST currently provides 50% matching to one donor (donor, \$1200/year; HIST, \$600/year).
- Annual costs ca. \$1700 - \$2000/year.
- Annual income ca. \$1800/year.
- Available as of 1/26/15 for the plaque program (excluding travel, see below): \$891.36.

- Available as of 1/26/15 \$4428.16 for local section travel support (ACS Innovative Grant Program).
- As of 2014, the Linda Hall Library of Science, Engineering and Technology (Kansas City, MO) has agreed to donate high quality images of journal articles, if available, at no charge for the award program.

Website

The website contains high quality images of all the plaques and much supplementary information, including photographs of many awards ceremonies, ceremony agenda, and related materials.

The CCB award program's website is exceptional and expanding, thanks to the excellent work of Vera Mainz. The website is organized by award year. Originally, there was only a table of all award winners for each year (from 2006 when the first awards were presented). From that page, one could and can see the award plaques for each winner as well as the supplementary material associated with that award. In 2014, several new pages were added that provide the visitor with rapid access to the awardees, organized by name OR location OR date of the awardee's publication.

CCB Award and History of Chemistry Publications

In 2014, David Lewis published an article in the *Bulletin* on the Mendeleev CCB award.

- [1] D. Lewis, *Bull. Hist. Chem.* "Citation for Chemical Breakthrough Award: Mendeleev's periodic system of the elements," **2014**, 39, 1-6.

In 2013, four papers were published on the CCB award program (see Table below).

- [1] N. C. Craig, *Bull. Hist. Chem.* "Charles M. Hall's persistent quest of patents for refining aluminum metal by electrolysis," **2013**, 38, 13-18.
- [2] J. Gal, *Bull. Hist. Chem.* "Citation for Chemical Breakthrough Awards: Choosing Pasteur's award-winning publication," **2013**, 38, 7-12.
- [3] T. Celestino, *Bull. Hist. Chem.* "REPORT. A Citation for Chemical Breakthrough Award to an Italian High School, the Scientific Liceo Amedeo Avogadro of Vercelli, for Avogadro's 1811 Paper," **2013**, 38, 1-3.
- [4] J. I. Seeman, *Bull. Hist. Chem.* "HIST's Citation for Chemical Breakthrough Awards: The "First Paper" or the "Breakthrough" Paper?," **2013**, 38, 4-6.