



# THE FILTER PRESS

Newsletter of the Georgia Section of the American Chemical Society

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May, 2002

## ***2002 Herty Award Goes to Professor Lanny Liebeskind of Emory University***

The 2002 Herty Award Committee proudly announces that this year's Herty Award goes to Professor Lanny Liebeskind of Emory University.

Professor Liebeskind is a distinguished scholar whose contributions to chemistry are far ranging. He is ranked among the top organometallic chemists in the world today. His work dealing with the application of cyclobutenediones for the synthesis of natural products is well known and heavily quoted. Liebeskind's work on the effect of copper salts in the Heck reaction has also attracted a great deal of attention. In addition, he has done some imaginative chemistry using molybdenum complexed heterocycles.

Liebeskind's recent studies on metal-mediated activation of the carbon-sulfur bond are not only chemically interesting, but also represent a very important process of biological and industrial importance. It is intriguing that nature has evolved metal-sulfur interactions as critical to so many catalytic interactions, even though the metal-thiolate bond is often very strong, and therefore should not be catalytically viable. This fundamental principle has guided the Liebeskind's group search for new synthetic organic methods that are based on metal-catalyzed transformations of thioorganic compounds. Taking a hint from Nature's use of a thioethanesulfonate moiety in nickel-cata-

lyzed biological processes, the Liebeskind group exploited the unique attributes of coenzyme M and thioglycolate derivatives in metal-catalyzed cross-coupling. This work led to an understanding of the

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### ***Bioinspired Organometallic Chemistry***

Given the stability of the bond between a mercaptide ligand and various redox-active metals, it is of interest that Nature has evolved significant metalloenzymatic processes that involve key interactions of sulfur containing functionalities with metals such as Ni, Co, Cu, and Fe. From a chemical perspective, it is striking that these metals can function as robust biocatalysts *in vivo*, even though they are often ipisoned as catalysts *in vitro* through formation of refractory metal thiolates. Insight into the nature of this chemical discrepancy is under study in our laboratory in order to open new procedures in synthetic organic and organometallic chemistry. These studies have led to the discovery of new synthetic methods based on metal-catalyzed transformations of thioorganic compounds.

***Thursday, May 23, 2002 at Renaissance Atlanta Hotel, Downtown***



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importance of various protocols for activation of metal thiolates, which are key intermediates in many metal-mediated transformations of thioorganic compounds.

More significantly and of great potential synthetic utility, the Liebeskind group discovered the first general coupling of thiol esters with boronic acids under neutral reaction conditions. The reaction is mechanistically distinct from the Suzuki coupling protocol (boronic acids and organic halides) where base is normally used. This new reaction will see significant use in academic labs and application in the pharmaceutical industry. By combining and applying the power of metals to synthetic chemistry, Professor Liebeskind has helped define a future direction for the field in which the choice of a problem in conjunction with the creativity of organic synthesis can be intertwined to address important questions at the interface of chemistry and material science.

In addition to his many scientific accomplishments, Professor Liebeskind has been a very effective leader in building the Chemistry Department of Emory University. During his term as Chairman of the Department, he set in motion a variety of activities that are now leading to an extensive strengthening of the faculty, an excellent growth in the graduate student population, a major increase in external funding, and a major improvement in the physical facilities. His leadership also goes beyond the Department. For the past two years, Professor Liebeskind has acted as Senior Associate Dean for Science and Research at Emory, and is providing his capable guidance for all of the science departments in the University. Several years ago, he formed the Faculty Science Council of Emory College, which has focused and thereby strengthened the efforts of the sciences with respect to both graduate and undergraduate education. On the national scene, Professor Liebeskind is recognized as a moving force in the hierarchy of chemistry. He has served as editor for several prestigious journals and has organized numerous conferences and served on many advisory committees.

In summary, Dr. Liebeskind is an outstanding scholar, teacher, community leader, and a very deserving recipient of the Herty Award.

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**2002 Herty Award Dinner**  
**Dr. Lanny Liebeskind – Emory University**  
**Renaissance Atlanta Hotel - Downtown**  
**Atlanta, GA**



*Date:* Thursday May 23, 2002

*Time:* 6:30 - 7:00 p.m. Arrive  
7:00- 8:00 p.m. Dinner  
8:00 – 9:00pm Speaker

*Dinner:* Choice of Salad: Traditional Caesar Salad or Field Greens, Romaine, Iceberg, Radicchio, Watercress, Julienne of Jicama and Carrot, Tomatoes Served with Choice of Dressing

Choice of Entrée: Grilled Double Chicken Breast Served in a Port Wine and Shitake Mushroom Sauce or Broiled Salmon Fillet, Citrus Herb Buerre Blanc

Chef's Choice of Vegetables

Choice of Dessert: Southern Pecan Pie or Parish Truffle Cake

Selection of: Rolls; Coffee or Iced Tea

*Location:* Renaissance Atlanta Hotel Downtown  
590 West Peachtree Street  
Atlanta, GA  
404-881-6000

*Directions:* Take North Ave. exit off I-75/85. Turn left at the first light onto North Avenue. Turn right at the next light onto Spring Street. The hotel parking deck will be on the right just past the BP gas station. Other parking is also available nearby.

*Cost:* \$ 25.00 per person, full-time students with ID and high school teachers, \$20.00. Students graduating this semester will receive their meal compliments of the ACS. Payment should be made to the ACS Georgia Section and will be collected at the door.

*RSVP:* Brian Fowler, Bridgestar Inc. 770-602-4222, bstar1@bellsouth.net  
When making reservations, please state your name, professional affiliation, and telephone number. Reservation deadline is 5:00 PM on Tuesday May 21, 2002. If you make a dinner reservation but fail to attend, you must still make payment for your meal.

## Charles Holmes Herty

Charles Holmes Herty was a celebrated, patriotic chemist whose motto was "For Science and Country". He was born in Milledgeville, Georgia on December 4, 1867. Although orphaned at the age of eleven, Herty went to college at the University of Georgia, where he earned a B.A. degree and was the "First Honor Man" of the class of 1886. Herty attended Johns Hopkins University and received his Ph.D. in 1890. He studied with Ira Remsen, the eminent physical chemist. Herty's thesis dealt with complex ions of the Werner type.

Herty returned to the University of Georgia in 1891 as an instructor in chemistry and as the South's first football coach. He married Sophie Schaller in 1895, and they had three children. In 1899, Herty left Georgia to study in Europe; he worked under Witt and Kerner in Berlin, and under Werner in Zurich.

Upon returning to the United States, Herty joined the US Forestry Service. His work was directed toward saving the pine forests in the Southeast. The naval stores industry had been systematically killing the forests in their efforts to collect tree resin using a trough which was backed into the tree wood. Herty developed a method to collect the resin in a metal cup, sparing the tree's life; the method was used by the Forestry Service for seventy-five years. Herty's patent of the method enabled him to be financially secure for the rest of his life.

In 1905, Herty joined the faculty of the University of North Carolina at Chapel Hill as Chairman of the Chemistry Department and Smith Professor. He was also appointed Director of Athletics. His research interests centered around natural products which had commercial promise, such as turpentine, soaps, leathers, and cottonseed oil.

In 1915-1916, Herty became the first President of the American Chemical Manufacture Society. In 1917, he resigned from the University of North Carolina to become the first full-time editor for the journal of Industrial and Engineering Chemistry. Herty used his position as editor to write political editorials furthering the advancement of chemistry in the United States. His two main concerns were the formation of the Chemical Warfare Service and the ability of the United States to manufacture quality chemical products which had previously been purchased from Germany.

From 1921 to 1927, Herty served as President of the Synthetic Chemical Manufacturers Association, an organization that he helped to establish. He also collaborated with Francis P. Garvan on the alignment of chemistry and medicine which resulted in the start of the National Institutes of Health.

Herty became a private consultant to the chemical industry in 1928. His research focused on the conversion of pine pulp to newsprint. He formed the Savannah Paper and Pulp Laboratory in Savannah, Georgia with a \$50,000 grant from the Chemical Foundation and a \$20,000 per year grant from the State of Georgia. By 1933, the plant had developed a feasible process for pulp conversion. On March 31, 1933, the first newspaper was printed using paper created with the Herty process.

Charles Holmes Herty made numerous contributions to chemistry in the development of new products and the advancement of new ideas. The Georgia Section of the American Chemical Society pays tribute to this ingenious man each year by awarding a chemist from the Southeastern United States with the prestigious Herty Medal.

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## Was Dr. Charles Herty The Most Important U.S. Chemist?

by Donald G. Hicks, Ph.D.

Following is a list of the major career achievements of Dr. Charles Holmes Herty (1867-1938), a native of Milledgeville, Georgia. His success *in all areas below* is the main reason for suggesting that he was the most important chemist in history with respect to development of the U.S. chemical enterprise. It can be documented that Charles Herty—

1) was an outstanding chemistry professor during the first 43% of his career spent at universities,

2) did personal research in 1902 that saved the southern U.S. pine forests and the turpentine (“naval stores”) industry based upon them,

3) was the first or one of first strong promoters of forest replanting and management,

4) organized chemists to solve critical defense problems in the first U.S. World War,

5) was first ACS President to seriously promote chemistry’s public image and started a 23-year career of traveling across the U.S. (often 2 weeks per month by train making eloquent, spell-binding, persuasive, and passionate speeches that promoted more research, better chemical education, expansion of U.S. chemical industries, and the importance of chemistry to the general public,

6) was the U.S. chemist best known to the general public during his lifetime,

7) proposed and started the ACS News Service that publishes the weekly *Chemical & Engineering News* and is a major source of scientific information for the public from the world’s largest scientific society (ACS),

8) instigated formation of the Synthetic Organic Chemical Manufacturers Association (SOCMA), and as its first President was given primary credit for promoting the huge growth of the U.S. chemical industries from 1918-1940, particularly in the area of dyestuffs, pharmaceuticals, and organic chemical products, *without personal financial gain*,

9) never received a Nobel Prize, but did personal chemistry research in the 1930’s that *quickly* led to a major industry, based on the renewable pine tree

resource, that dramatically improved the economy and still today accounts for one of every nine manufacturing jobs in the southern United States *without personal financial gain*,

10) did personal research that slowed decimation of the northern hardwood forests,

11) did personal chemistry research that led to the tree-farming industry *without* personal financial gain,

12) proposed it, and led the effort that created in 1930 the National Institutes of Health (NIH), one of the largest U.S. agencies funding scientific and medical research (\$27 billion in 2002).

Some chemists have created major industries and had financial gain, while others performed significant discovery research in chemistry, and a few have been good communicators. But how many were like Charles Herty who “did it all?”

### The Herty Medal

The Charles H. Herty Medal is a beautiful solid gold medallion awarded annually by the Georgia Section of the American Chemical Society. The purpose of the award is to give public recognition to the work and service of outstanding chemists who have significantly contributed to their chosen fields. All chemists in academic, government, or industrial laboratories in the southeastern United States (Virginia, West Virginia, Kentucky, Tennessee, Mississippi, Louisiana, Alabama, Georgia, Florida, North Carolina, and South Carolina) are eligible.

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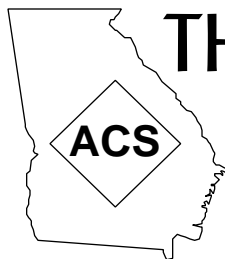
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