

# ACS memorial plaques in New York City

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**Abstract** As of spring 2015, five American Chemical Society (ACS) “National Historic Chemical Landmark” plaques have commemorated outstanding achievements in chemistry in New York City. These are at New York University (NYU), Columbia University, Rockefeller University (all in Manhattan), and the Polytechnic School of Engineering of NYU (in Brooklyn). The fifth used to be at the Pfizer plant in Brooklyn. The ACS Division of the History of Chemistry has its own program of commemorative plaques of “Citation for Chemical Breakthrough” and those erected in New York City are also introduced here.

**Keywords** “National Historic Chemical Landmark” plaques · “Citation for Chemical Breakthrough” plaques · New York University · Columbia University · Rockefeller University · Polytechnic School of Engineering of NYU · Pfizer Inc

## Introduction

Cultivating tradition and remembering the past serves honorable purposes. Chemistry has a great deal to remember and to be proud of, but there is yet a lot to do for increasing awareness of the benefits for humankind from this branch of science.

The American Chemical Society (ACS) has a wonderful program of commemorating seminal discoveries and

outstanding pioneers with memorial plaques. On a recent visit during fall 2014 to New York City, we have found four “National Historic Chemical Landmark” plaques, and learned about a fifth as well. Five memorial plaques is not a large number if considering the vastness of science and its achievements in this great city.

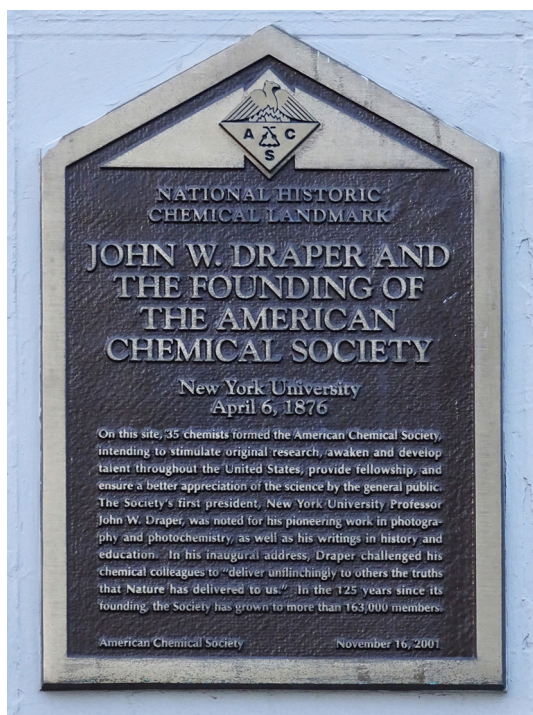
In addition to the National Historic Chemical Landmark program, the ACS Division of the History of Chemistry has its “Citation of Chemical Breakthrough” program of memorial plaques. The program recognizes seminal publications. As of spring 2015, we are aware of three such plaques in New York. We present these eight plaques below and one more that predated the systematic programs. All photographs of the memorial plaques are by Istvan and Magdolna Hargittai, except the Urey plaque at Columbia University and the Pfizer plaque.

## Foundation of ACS

In 2001, the ACS erected a plaque (Fig. 1) of National Historic Chemical Landmark on the wall of the science center of New York University (NYU). The title of the plaque is, “John W. Draper and the Founding of the American Chemical Society,” marking the event on April 6, 1876, at NYU. It says, “On this site, 35 chemists formed the American Chemical Society intending to stimulate original research, awaken and develop talent throughout the United States, provide fellowship, and ensure a better appreciation of the science by the general public. The Society’s first president, New York University Professor John W. Draper, was noted for his pioneering work in photography and photochemistry, as well as his writings in history and education. In his inaugural address, Draper challenged his chemical colleagues to ‘deliver

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**Fig. 1** “National Historic Chemical Landmark” plaque commemorating the 125th anniversary of the foundation of the Society, at 32 Washington Square N, Manhattan. ©Hargittai

unflinchingly to others the truth that Nature has delivered to us.’ In the 125 years since its founding the Society has grown to more than 163,000 members.” This plaque is beneath a round plaque (Fig. 2) commemorating the centennial of the founding of the American Chemical Society.

The two ACS plaques are on the wall of at the NE corner of Washington Square, on the western façade of the



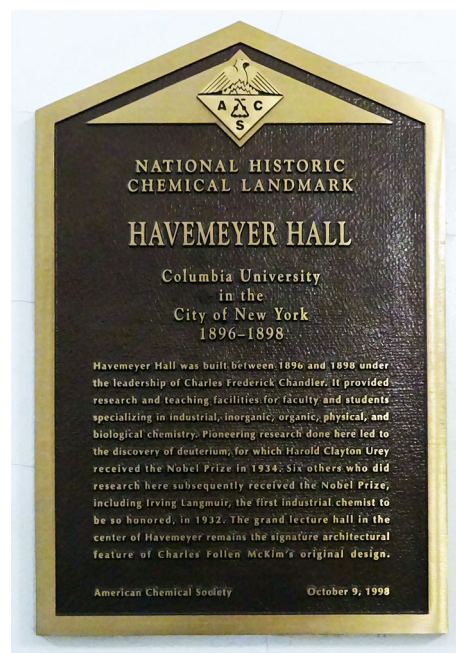
**Fig. 2** ACS plaque commemorating the centennial of the foundation of the Society ©Hargittai

Silver Center for Arts and Science, College of Arts and Science, NYU (32 Washington Square N). There is yet another plaque next to the ACS plaques, but on the northern façade of the Silver Center; this one is “In honor of the seven public school-teachers who taught under Dutch rule on Manhattan Island.” It lists the names of the seven teachers; the time-period was between 1633 and 1674, and the plaque was erected in 1909.

## Columbia University

This “National Historic Chemical Landmark” plaque of the ACS (Fig. 3) was placed in 1998 on the wall in the entrance lobby of Havemeyer Hall on the campus of Columbia University. The occasion was the centenary of the completion of Havemeyer Hall, which was built under the leadership of Charles F. Chandler. There is a Chandler bust in the same hallway where the ACS plaque is. The plaque makes reference to seven Nobel laureates who did research in Havemeyer Hall and singles out two by name. One is Irving Langmuir, “the first industrial chemist to be so honored,” in 1932. The other is Harold C. Urey who discovered deuterium for which he received the Nobel Prize in 1934.

Havemeyer Hall provided research and teaching facilities for faculty and students specializing in industrial,



**Fig. 3** “National Historic Chemical Landmark” plaque in the entrance lobby of Havemeyer Hall dedicated to the centenary of the opening of Havemeyer Hall housing the chemistry department of Columbia University (1998) at 3000 Broadway, Manhattan ©Hargittai



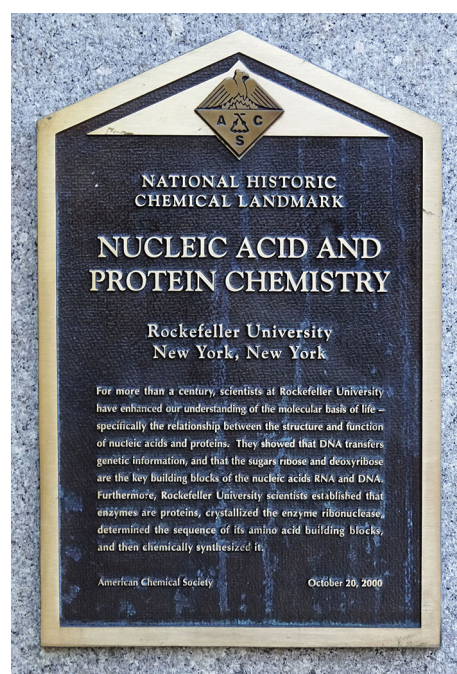
inorganic, organic, physical, and biological chemistry. The “Citation of Chemical Breakthrough” plaque (Fig. 4) honors Urey and his associates’ pioneering paper, viz., H. C. Urey, F. G. Brickwedde, and G. M. Murphy, “A Hydrogen Isotope of Mass 2.” *Phys. Rev.* 1932, 39, 164–165. The members of the team were associates of Columbia University (Urey and Murphy) and the National Bureau of Standards (Brickwedde).

## Rockefeller University

The ACS placed this “National Historic Chemical Landmark” plaque (Fig. 5) at the entrance to Flexner Hall of Rockefeller University (RU) in 2000. It says, “For more than a century, scientists at Rockefeller University have enhanced our understanding of the molecular basis of life—specifically the relationship between the structure and function of nucleic acids and proteins. They showed that DNA transfers genetic information, and that the sugars ribose and deoxyribose are the key building blocks of the nucleic acids RNA and DNA. Furthermore, Rockefeller University scientists established that enzymes are proteins, crystallized the enzyme ribonuclease, determined the sequence of its amino acid building blocks, and then chemically synthesized it.”



**Fig. 4** “Citation for Chemical Breakthrough” plaque marking the seminal paper by Urey et al. reporting the 1932 discovery of deuterium



**Fig. 5** “National Historic Chemical Landmark” plaque commemorating the seminal discoveries of Rockefeller University scientists in the chemistry of nucleic acids and proteins, at the entrance to Flexner Hall at Rockefeller University, 1230 York Avenue, Manhattan ©Hargittai

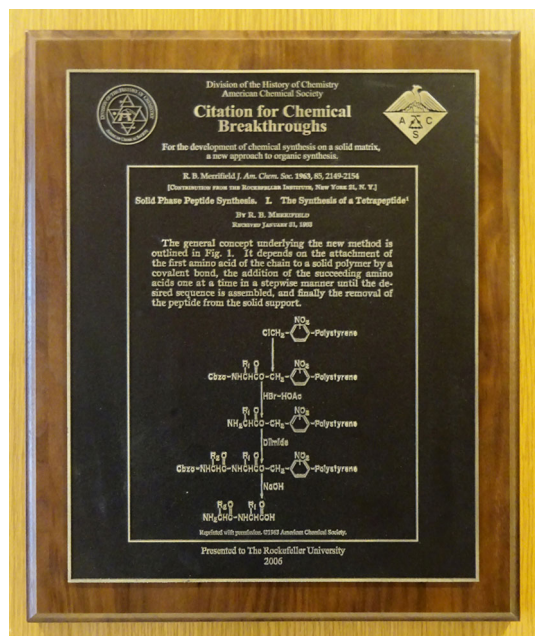


**Fig. 6** “National Historic Chemical Landmark” plaque commemorating Avery et al.’s seminal paper of 1944 establishing that DNA is the substance of heredity, at the entrance to the Rockefeller University Hospital ©Hargittai

The ACS Division of the History of Chemistry placed a plaque (Fig. 6) of “Citation for Chemical Breakthrough” in 2013 at the Rockefeller University Hospital. It commemorates the “Discovery that DNA is the Material of Genes.” The plaque symbolically reproduces the essence of the paper by Oswald T. Avery, Colin MacLeod, and Maclyn McCarty, “Studies on the Chemical Nature of the Substance Inducing Transformation of Pneumococcal Types: Induction of Transformation by a Desoxyribonucleic Acid Fraction from *Pneumococcus* Type III.” *Journal of Experimental Medicine*, 1944, 79, 137–158.

This ACS plaque is beneath another plaque that the Rockefeller University erected as part of the centennial celebration of the RU Hospital in 2010. This plaque has the title: “The Discovery of DNA as the Molecule of Heredity.” It says, “In 1944, Drs. Oswald T. Avery, Colin M. MacLeod, and Maclyn McCarty reported their landmark research conducted on the sixth floor of this building demonstrating that pure DNA from a virulent strain of pneumococcus could stably transform a non-virulent strain into one that was virulent. This research, which grew out of the studies of patients with pneumonia who were treated in this Hospital, established that DNA is the molecule of heredity, one of the greatest discoveries in the history of biology.”

The ACS Division of the History of Chemistry placed a plaque (Fig. 7) of “Citation for Chemical Breakthrough” in 2006 in the Founders Hall of Rockefeller University. It is “For the development of chemical synthesis on a solid matrix, a new approach to organic synthesis.”



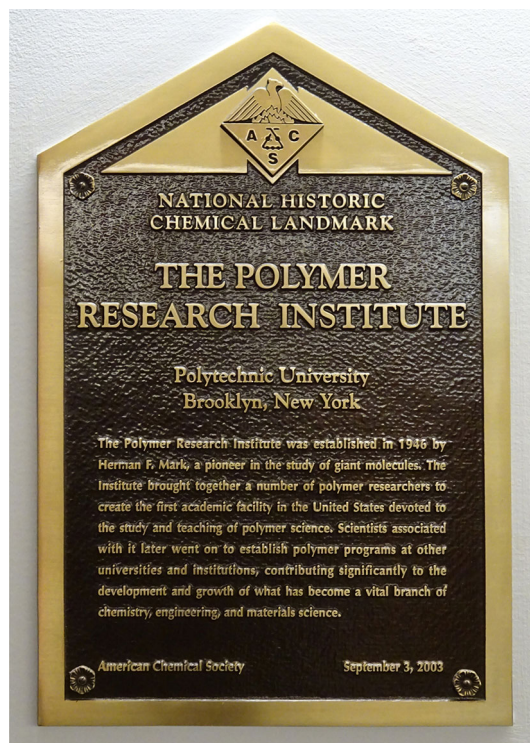
**Fig. 7** “National Historic Chemical Landmark” plaque commemorating Merrifield’s seminal paper about the discovery of solid-phase peptide synthesis, on the fourth floor of Founders Hall ©Hargittai

matrix, a new approach to organic synthesis.” The plaque symbolically reproduces the essence of the paper by R. Bruce Merrifield, “Solid Phase Peptide Synthesis. I. The Synthesis of a Tetrapeptide.” *Journal of the American Chemical Society*, 1963, 85, 2149–2154.

Also in 2006, the American Peptide Society presented a plaque to RU as a tribute to R. Bruce Merrifield, “an exceptional scientist, a wonderful colleague and an inspiring mentor.” Merrifield’s actual experimental setup is on display at the exhibition of historic equipment at RU.

## NYU Polytechnic School of Engineering

This plaque (Fig. 8) is a tribute to the Polymer Research Institute of Polytechnic University, Brooklyn, now, the Polytechnic School of Engineering of NYU. The ACS erected it in 2003. It says, “The Polymer Research Institute was established in 1946 by Herman F. Mark, a pioneer in the study of giant molecules. The Institute brought together a number of polymer researchers to create the first academic facility in the United States devoted to the study and teaching of polymer science. Scientists associated with it



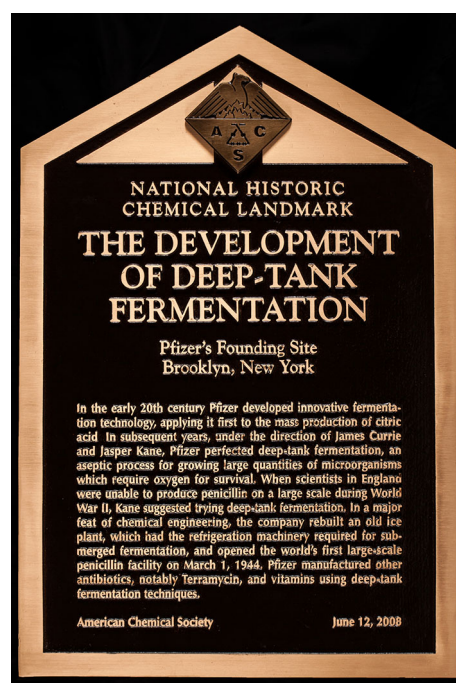
**Fig. 8** “National Historic Chemical Landmark” plaque commemorating Herman F. Mark’s seminal discoveries in polymer chemistry and the achievements of the Polymer Research Institute, in the entrance hall of the Joseph J. and Violet J. Jacobs Building, Polytechnic Institute of New York University, 305–315 Jay Street, Brooklyn ©Hargittai



later went on to establish polymer programs at other universities and institutions, contributing significantly to the development and growth of what has become a vital branch of chemistry, engineering, and materials science.” There is a Herman F. Mark bust in a secluded office of the Joseph J. and Violet J. Jacobs Building.

### Pfizer, Inc

There used to be a “National Historic Chemical Landmark” plaque (Fig. 9) at the Founding Site of Pfizer Pharmaceutical Company in Brooklyn. The site is no longer operational and lately, the plaque has been in Pfizer’s Archives. It was for “The Development of deep-tank fermentation.” The ACS erected this plaque in 2008. Its inscription says, “In the early twentieth century Pfizer developed innovative fermentation technology, applying it first to the mass production of citric acid. In subsequent years, under the direction of James Currie and Jasper Kane, Pfizer perfected deep-tank fermentation, an aseptic process for growing large quantities of microorganisms, which require oxygen for survival. When scientists in England were unable to produce penicillin on a large scale during World War II, Kane suggested trying deep-tank fermentation. In a major feat of chemical engineering, the company rebuilt an old ice plant, which had the refrigeration machinery required for submerged fermentation, and opened the world’s first large-scale penicillin facility on March 1, 1944. Pfizer manufactured other antibiotics, notably Terramycin, and vitamins using deep-tank fermentation techniques.”



**Fig. 9** The National Historic Chemical Landmark plaque honoring the development of deep-tank fermentation technology in 1944 used to be at Pfizer’s Brooklyn plant (courtesy of Pfizer, Inc)

**Acknowledgments** In spring 2015, it took quite some detective work by Bob Weintraub, Director of the Library of Sami Shamoon College of Engineering (Beersheva and Ashdod, Israel) to determine the current whereabouts of the Pfizer plaque. I thank him and Jeff Brand of Corporate Affairs, Pfizer, Inc, New York, for a high-quality image of the plaque. Furthermore, I thank Vera V. Mainz (Urbana, IL) for a high-quality image of the Urey plaque. This Editorial was based on the preparations of a book tentatively titled *New York Scientific* by Istvan Hargittai and Magdolna Hargittai.