

GUEST EDITORIAL

**Nano and Molecular Science and Technology
Special Issue Honoring Paul Barbara**

This special issue of *Accounts of Chemical Research* is dedicated to the life of Paul Barbara, with contributions by some of his former students, colleagues, and friends. Paul was a brilliant, energetic, enthusiastic, creative, and visionary scholar and, equally important, a very warm and thoughtful husband, father, and friend to many.

Paul Barbara grew up in New York City. When he was a child, the first book he read was about molecules, and this sparked his life-long dedication to science. In 1974, Paul received his BS from Hofstra University in physical organic chemistry. During this time at Hofstra, he took full advantage of the professors open-door policy, a habit he would replicate with his own students and young colleagues when he became a professor himself, Paul completed his PhD at Brown University, where he met his first mentor and PhD supervisor, Ron Lawler. Using the most advanced NMR technology of the time, Paul and Ron studied reaction mechanisms. At Brown, Paul was also deeply inspired by the late Professor Robert Cole, whose lectures on the dielectric properties of materials Paul would never forget.

When Paul completed his PhD in 1978, he had a post-doctoral appointment at Bell Laboratories in Murray Hill, N.J., to do research with Peter Rentzepis, who was among the first scientists to use picosecond lasers to study ultrafast processes in molecules, a field that was just emerging as being active and very competitive around the world. Louis Brus was also at Bell Lab at that time and greatly influenced the way Paul would identify the best research problems.

In 1980, Paul joined the faculty of the University of Minnesota and moved through the ranks, becoming a full professor in 1990. From 1985 to 1998, Paul held the 3M Alumni Distinguished Professor Chair in Chemistry. His first scientific problem was to study solvent dynamic effects by using ultrafast picosecond spectroscopic techniques. During this period of his career he made major contributions in the field of molecular rotations, intermolecular interactions, and electron-transfer processes in photosynthesis. These

major scientific activities drew the attention of top theoreticians such as Rudy Marcus and Joshua Jortner.

In 1998, having worked closely with Peter Rossky on various topics and especially in the field of hydrated electrons, conjugated polymers, and "plastic electronics," Paul decided to join Peter at the University of Texas at Austin. At UT, where he held the Richard J. V. Johnson Welch Chair in Chemistry, Paul divided his research group into two main areas of interest—materials science and complex biological problems. In 1999, he was elected to the American Academy of Arts and Sciences. Then, in 2000, as the Director of the Center for Nano- and Molecular Science and Technology at the University of Texas at Austin, Paul led the effort to construct a new building on the UT campus to house the Center and used his many talents to achieve this goal. Battling the caprice of interest, resource allocation, and geography, the multiyear project was eventually completed, and the new building for the Center was opened in 2006. It was later named after a former UT President, Larry Faulkner and is devoted to interdisciplinary research efforts. In 2006, Paul was also elected as a member of the National Academy of Sciences. In 2009, he led a nationwide group competing and succeeding in forming the DOE Energy Frontier Research Center, of which he became the director. As the director of this center, Paul has led the UT's involvement in a large-scale, nationwide collaborative effort in solar energy research.

Paul relished his academic mentoring role, as evidenced by his more than 80 doctoral/postdoctoral mentees, 35 of whom have gone on to academic positions in five of the seven continents: North America, South America, Europe, Asia, and Australia. He not only insisted on deeply analyzing a problem, when he advised students to "Stop! Think," but also eschewed apathy in favor of passion, when he admonished "Stop! Don't think!" These two traits combine to form his legacy to his students and to his field, namely an insistence on pursuing a big, exciting goal with steadfast devotion to the underlying physical principles involved.

The drive to understand the true nature of his scientific fascination led Paul to make contributions to fields as diverse as nuclear magnetic resonance, molecular photo-physics, polymer materials science, and retroviral replication, at times challenging the status quo in his new field as a force unto himself. Paul's ability to make contributions to new scientific fields, some of which are notoriously hostile to neophytes, speaks to his powers of persuasion.

Paul's creative and critical contributions to science and to the field of chemistry did not stop at advancing his own research field of research. Paul has extended the use of his creative and critical scientific talents to the service of the field of chemistry in many capacities and in many worldwide functions. He served as associate editor or on the advisory board of a number of high impact journals in the USA and in a number of European and Asian journals. His service to the American Chemical Society is highly recognized, as he held and performed with dedication a number of important posts. Paul was well recognized for his contribution in moving the field of physical chemistry back to the American Chemical Society during the late 1980s, in the 1990s when he was serving as a Senior Editor of the *Journal of Physical Chemistry*, and when he was a member and chairman of the division of Physical Chemistry during that period. During the last 15 years, Paul was a Senior Editor of *Accounts of Chemical Research*. During that period, his creative and visionary ideas contributed to the increased impact of the journal in the field of physical chemistry and extensions to a number of areas commonly known as biophysics and materials research.

Paul's positive impact on the field of chemistry was not limited to the USA but expanded to Europe and Asia. His interactive and friendly personality led him to have

many international networks and collaborations. He interacted with scientists in Paris, Leuven, Lisbon, Pisa, Osaka, Kyoto, Nara, Kobe, and Tokyo. He gave a number of plenary/special lectures at international meetings as he did at National meetings. His strong collaborative attitude was honored by Special Awards from the Institut Universitaire de France, a Distinguished Guest Professorship at Osaka University, and a Special Award of the Japanese Photochemistry Association.

Paul passed away on October 31, 2010 leaving behind a loving and dedicated wife, Sharon, a charming daughter, Juliet, and a fine young son, Jason. He was also exceedingly proud of his three grandchildren and many nieces and nephews. During his life, Paul succeeded in combining his two greatest passions—his family and his science—while never forgetting his friends, whose own scientific endeavors and personal lives were always close to his heart.

FOOTNOTES

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

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