

# SYNTHESIS



Martin Semmelhack

Dear Marty: Happy Birthday from all of us.

It is a great pleasure for us to dedicate these recent results of our laboratories to you. We have all interacted scientifically over the years and have been impressed and inspired by your scientific work. We all remember enthusiastic and stimulating discussions with you. Your pioneering contributions in arene-chromium and iron organometallic chemistry, your elegant natural product syntheses, and especially your enlightening ideas have changed our view on organic chemistry. Last but not least, we have appreciated your vision of life, your radiant sympathy, your optimism, your sense of humour and your dynamism. Many nice memories come to my mind as I write these short lines.

Best wishes. Good health to you and your family, a lot of success in future chemistry projects.

Paul Knochel

Dear Readers,

I hope that you will enjoy this Special Section dedicated to Professor Martin Semmelhack on the occasion of his 65<sup>th</sup> birthday.

Martin Semmelhack was born (11/19/1941) and grew up in Appleton, Wisconsin. He attended the University of Wisconsin (1959–1963) where he was first introduced to organic chemistry research through an undergraduate project in organic photochemistry under Professor Howard Zimmerman. In the fall of 1963, he began doctoral research with Professor E. J. Corey at Harvard University in the new field of organotransition-metal reagents applied in organic synthesis. He left Harvard in the spring of 1967 to take up a postdoctoral position as NIH fellow with Professor William S. Johnson at Stanford University. With the Johnson team, he completed the first synthesis of a natural steroid using the polyolefin cyclization strategy.

In the fall of 1968, he began his independent research work as Assistant Professor at Cornell University. His early work involved the development of organo-nickel coupling reactions and nucleophile addition to metal-activated aromatic rings, including both mechanistic work and applications in the synthesis of natural products. In a quite unrelated effort, his group prepared spiro[4.4]nonatetraene, one of the first test cases for the subtle effects of spiroconjugation and an example of organic synthesis in the exploration of a basic issue of bonding theory. He was promoted to Associate Professor in 1973 and Full Professor in 1977.

In 1978, he moved his research group to Princeton University and continued to expand the synthesis applications of nucleophile addition to metal-activated polyenes, especially using arene-chromium complexes and 1,3-diene-iron complexes. The striking benzannulation reaction of carbene-chromium complexes became a focus of his work in the early 1980s including the first intramolecular example in the synthesis of deoxyfrenolicin, a naphthoquinone antibiotic. The deoxyfrenolicin problem was simplified by the development of intramolecular alkoxyacylation catalyzed by Pd(II), and this observation was developed into a general tool for tetrahydrofuran and tetrahydropyran formation. An interest in the use of electrochemistry in synthesis methodology began with a set of protecting group protocols for selective electrochemical deprotection. It was expanded to include electrochemical oxidation methods using a catalytic amount of a nitrosonium ion derived from TEMPO.

Professor Semmelhack has served on the editorial boards of *Journal of Organic Chemistry*, *Organometallics*, *Organic Reactions*, *Organic Synthesis*, and *Comprehensive Organic Synthesis*. He served on the Executive Committee of the Organic Chemistry Division of the American Chemical Society and as Chair of the Organic Division in 1988. He is co-author of about 170 publications and has received the Camille and Henry Dreyfuss Fellowship, the Alfred P. Sloan Foundation Fellowship, and a Guggenheim Fellowship (1978). He spent the years 1988–1990 as Consulting Director of Chemistry at the American Cyanamid Medical Research Division.