

PREFACE TO VOLUME 90

What's in a name?

W. Shakespeare, *Romeo and Juliet*, (1595) act 2, sc. 2, l. 43

Name reactions! Organic chemists are obsessed with name reactions. Today one can find many compendia (and of course apps) and even an encyclopedia of name reactions, some of which such as “Strategic Applications of Named Reactions in Organic Synthesis” by László Kürti and Barbara Czako provide excellent summaries of the genesis, mechanism, and applications of these celebrated transformations. In the preface to Volume 77 I wrote that

“the caché associated with a “name reaction” carries a special significance. Apart from the convenience of being able to identify a given transformation by a simple name and assign credit (whether deserved or not!) to specific individual or individuals, the designation of a name reaction implies a high standard of utility, generality or uniqueness.”

Of the 279 chapters published in the *Organic Reactions* series, 103 are based on name reactions and many others have since become name reactions such as “Palladium-Catalyzed Vinylation of Organic Halides” in Volume 27 by Richard F. Heck. In addition to the special significance of the transformation, name reactions also raise the obvious question, “Who is/was that individual”? Apart from historians of science, few practicing chemists and certainly most students actually know *who* these exceptional people are/were. This is certainly the case for Arthur Michael.

“Arthur Michael (1853-1942) was for many years the most versatile and productive American organic chemist, with unrivaled scope and a highly individual view of the theoretical basis of organic chemistry. The son of a prosperous family in Buffalo, New York, he was educated in Germany, Russia, and France and had no college or university degrees except for honorary doctorates. His chemical training abroad resulted in over sixteen papers from Germany starting in 1876 some with S. Gabriel of the University of Berlin faculty and some with other students. His scientific publications numbered 225, appeared over a period of nearly seven decades, and were published from Tufts College, Harvard, or private laboratories which he maintained on the Isle of Wight in 1890s and at Newton Center, Massachusetts, after 1912.”

D. S. Tarbell and A. T. Tarbell,
“Essays on the History of Organic Chemistry in the United States, 1875-1955”,
Folio Publishers: Nashville; 1986, p. 45.

Michael published his first paper on the eponymous reaction simultaneously in German and English in 1887. Ironically, this reaction had already been reported by Ludwig Claisen in 1883 and Michael acknowledged Claisen's priority but he substantially expanded its scope and generality. It can be argued that the Michael Reaction is the first name reaction to be ascribed exclusively to an American organic chemist.

It is therefore not surprising that two chapters covering the Michael Reaction have already appeared in the *Organic Reactions* series in Volumes 10 (the basic reaction) and 47 (the intramolecular version). The chapter that comprises the current volume by Efraím Reyes, Uxue Uria, Jose L. Vicario, and Luisa Carrillo represents the most advanced variant of this powerful reaction, namely, the catalytic, enantioselective Michael Reaction. The inherent ability of the Michael Reaction to create up to three contiguous stereogenic centers has clearly been recognized and over the course of the past decades, many investigators have learned to control the relative configurations of these newly formed centers. Moreover, the Michael Reaction, thanks in part to its exothermicity, is highly susceptible to catalysis, which in turn has stimulated an enormous amount of activity in the development of chiral catalysts to control both the relative and absolute configurations of the products.

Prof. Vicario and his team have composed an outstanding summary of the most important catalytic variants now available from metal catalysis to organocatalysis. In addition they have provided a detailed description of those pairwise combinations of Michael donor and Michael acceptor that are best suited for a given catalytic mode. The power of this reaction is beautifully illustrated by selected examples in the total synthesis of complex natural products. As is the hallmark of *Organic Reactions* chapters, the comprehensive coverage found in the Tabular Survey is organized (by donor and acceptor) so that the practitioner hoping to find analogies or precedent for their own work will be quickly directed to the appropriate needle in this massive haystack.

Volume 90 represents the twelfth single chapter volume to be produced in our 75-year history (the third in a row and fifth in the past eleven volumes!). Such single-chapter volumes represent definitive treatises on extremely important chemical transformations. The organic chemistry community owes an enormous debt of gratitude to the authors of such chapters for the generous contribution of their time, effort, and insights on reactions that we clearly value.

It is appropriate here to acknowledge the expert assistance of the entire editorial board, in particular Jeffrey Johnson and P. Andrew Evans who shepherded this chapter to completion. The contributions of the authors, editors, and the publisher were expertly coordinated by the board secretary, Robert M. Coates. In addition, the *Organic Reactions* enterprise could not maintain the quality of production without the dedicated efforts of its editorial staff, Dr. Danielle Soenen, Dr. Linda S. Press, Dr. Dena Lindsey, and Dr. Landy Blasdel. Insofar as the essence of *Organic Reactions* chapters resides in the massive tables of examples, the author's and editorial coordinators' painstaking efforts are highly prized.

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