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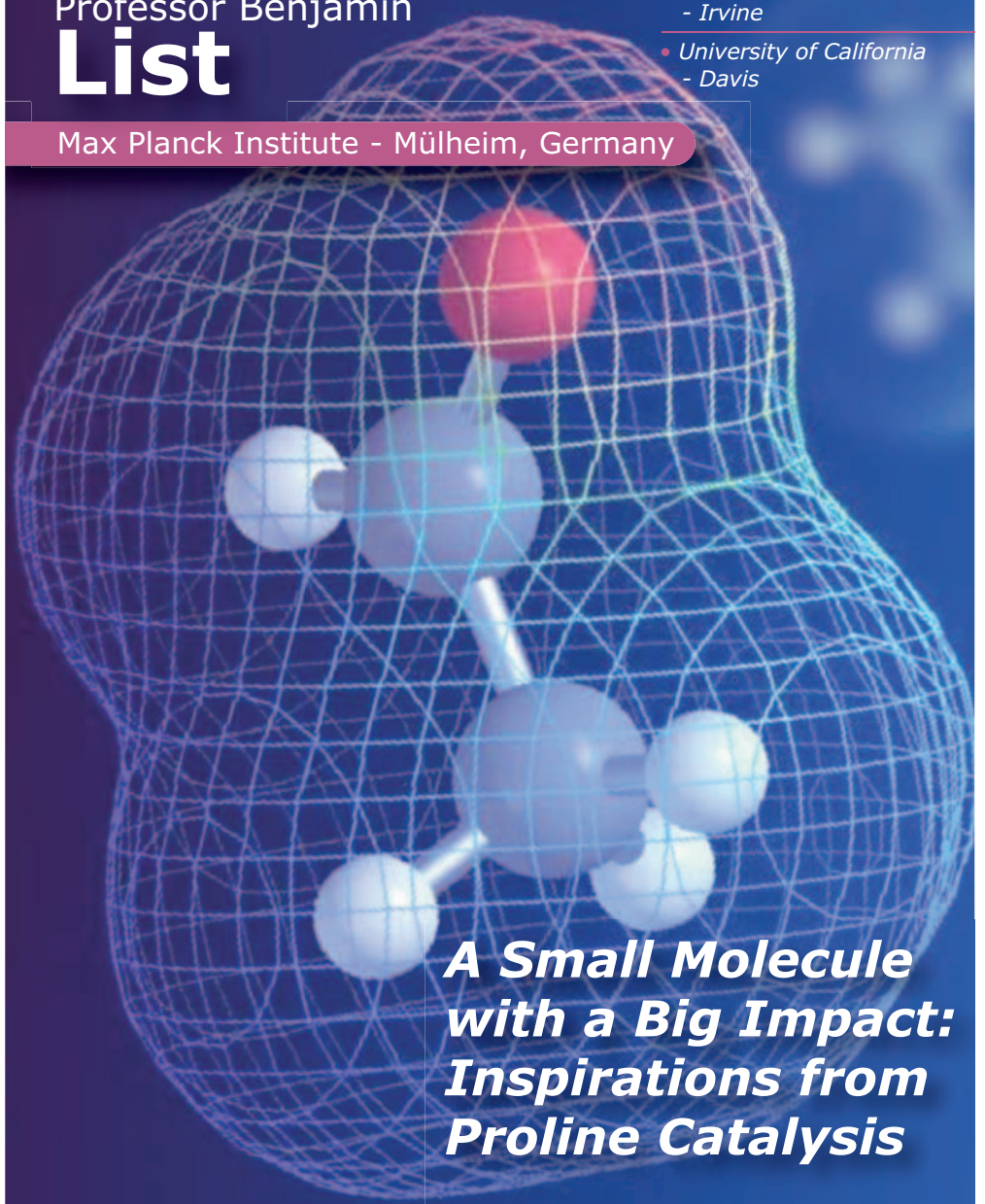

A Small Molecule with a Big Impact: Inspirations from Proline Catalysis

Benjamin List

Since 2005, Benjamin List has been a director at the Max-Planck-Institut für Kohlenforschung in Mülheim an der Ruhr (Germany). He obtained his "Diplom" at the Freie University of Berlin in 1993 and his Ph.D. in 1997 at the Johann-Wolfgang-Goethe-University in Frankfurt am Main. From 1997 until 1998 he conducted postdoctoral research at The Scripps Research Institute in La Jolla (USA) and became an assistant professor there in January 1999. In 2003 he joined the Max-Planck-Institut für Kohlenforschung in Mülheim. He has been an honorary professor at the University of Cologne since 2004.

Professor List's research focuses on organic synthesis and catalysis. He has contributed fundamental concepts to chemical synthesis including amino catalysis, enamine catalysis, and asymmetric-counter-anion-directed catalysis. His group has pioneered several new amine- and amino acid-catalyzed asymmetric reactions originating from his discovery of the proline-catalyzed direct asymmetric intermolecular aldol reaction in 2000. Shortly thereafter, his group has developed the enamine catalysis concept and introduced the first proline-catalyzed asymmetric Mannich reaction. Subsequently, his researchers pioneered novel Michael reactions, α-aminations, enol-exo-aldolizations, and aldehyde α-alkylations. Furthermore, his collaborative efforts have provided a clearer mechanistic understanding of enamine catalysis and established the basis for the design of new reactions and catalysts.

His latest work deals with chiral anions in asymmetric catalysis. In 2006 he introduced the concept of asymmetric counter-anion-directed catalysis (ACDC). This very general strategy for asymmetric synthesis has recently found widespread use in organocatalysis, transition metal catalysis, and Lewis acid catalysis.

The accomplishments of Ben List's group have been recognized with the Synthesis-Synlett Journal Award in 2000, the Carl-Duisberg-Memorial Award in 2003, the Degussa Prize for Chiral Chemistry, the Lieseberg Prize of the University of Heidelberg, and the "Dozentenstipendium" of the German Chemical Industry in 2004. He received the Novartis Young Investigator Award in 2005, the JSPS-Fellowship Award in 2006, the Award of the German Chemical Industry, and the Astra Zeneca Research Award in Organic Chemistry in 2007. In addition he has held many appointments as visiting Professor and named lectureships.

Organic Reactions

Organic Reactions was conceptualized at the 1939 National Organic Symposium as the brainchild of Roger Adams and some of the *Organic Syntheses* editorial board members. *Organic Reactions* was conceived as a collection of articles about specific reactions with which the authors had firsthand experience. The unique features of *Organic Reactions* distinguishing it from other review vehicles include exhaustive literature surveys, complete compilation of extant examples and representative, detailed experimental procedures.

Adams served as president and editor in chief from 1942 until 1960 when Volume 10 was published. A. C. Cope succeeded Adams until his death in 1966, when W. G. Dauben assumed that position followed by A. S. Kende, L. A Paquette, L. E. Overman, and currently S. E. Denmark. The original editorial board was separated into a board of editors and a board of directors as the responsibilities of managing the publication and its functions grew.

In defining the goals and mission of *Organic Reactions*, Adams wrote: "In the course of nearly every program of research in organic chemistry the investigator finds it necessary to use several of the better-known synthetic reactions. To discover the optimum conditions for the application of even the most familiar one to a compound not previously subjected to the reaction often requires an extensive search of the literature; even then a series of experiments may be necessary…The volumes of *Organic Reactions* are collections of chapters each devoted to a single reaction, or a definite phase of a reaction, of wide applicability. The subjects are presented from the preparative viewpoint, and particular attention is given to limitations, interfering influences, effects of structure, and the selection of experimental techniques. Each chapter includes several detailed procedures illustrating the significant modifications of the method."

From 1942 to the 1980's the challenge that *Organic Reactions* successfully addressed was the difficulty in compiling an authoritative summary of preparatively useful organic reactions from the primary literature. However, as abstracting services entered the electronic age, the challenge for the practitioner was no longer to locate all of the literature on the subject, but rather, how to critically and efficiently digest it. *Organic Reactions* chapters are much more than a surfeit of primary references; they constitute a distillation of an avalanche of information into the knowledge needed to correctly implement a reaction. It is in this capacity, namely to provide focused, scholarly, and comprehensive overviews of a given transformation, that *Organic Reactions* takes on even greater significance for the practice of chemical experimentation in the 21st century.

The authors of articles in *Organic Reactions* receive no royalties, and the editors do their work as a public service. The success of this enterprise involves the dedicated efforts of many prominent chemists who devote their efforts to the time consuming job of editing of chapters and producing volumes. It is remarkable that Adams' legacy of interest in organic chemistry, in organic chemists, and in students still motivates those who carry this important resource forward.

Scott E. Denmark, 2009