



Science of Synthesis News

Volume 1, Issue 3 Dec. 2001

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Welcome from the Managing Editor

guido.herrmann@thieme.de

Dear Reader,

Welcome to the third issue of the *Science of Synthesis* newsletter. You will find in this newsletter latest news from the Editorial Office (Dr. Fiona Shortt), information on new volume editors (Dr. Joe Richmond), and an update on our marketing activities (Dr. Thomas Krimmer).

The focus of this newsletter, however, is on three individuals centrally involved in *Science of Synthesis*:

Prof. Ryoji Noyori, member of the Editorial Board of *Science of Synthesis*, has been awarded the 2001 Nobel Prize in Chemistry. Prof. Daniel Bellus, member of the Editorial Board of *Science of Synthesis*, congratulates Prof. Noyori on behalf of the entire project. Prof. Hisashi Yamamoto, Volume Editor of Volume 7 of *Science of Synthesis*, highlights some of the many scientific achievements of Prof. Noyori.

Prof. Eric Jacobsen from Harvard University has agreed to join the Editorial Board of *Science of Synthesis*. We are very delighted to have one of the leaders in the field of



stereoselective chemistry on our Editorial Board. Dr. Richmond will introduce Prof. Jacobsen in this issue of the newsletter.

Albrecht Hauff, CEO and President of Thieme, will share with you his views on *Science of Synthesis* and some of his more personal experiences with chemistry.

Finally, Volume 1 of *Science of Synthesis* "Compounds with Transition Metal—Carbon Bonds and Compounds of Groups 10–8 (Ni, Pd, Pt, Co, Rh, Ir, Fe, Ru, Os)" has been published recently. My congratulations go to Prof. Barry Trost, Prof. Mark Lautens, and their outstanding authors for their very fine contribution to the field of organometallic chemistry. Also, this volume consisting of 1112 pages has posed many challenges to the editorial office, which the team around Dr. Shortt has mastered again in a superb way.

Guido F. Herrmann
Managing Editor
Science of Synthesis

Editorial Update

Dr. M. Fiona Shortt, Deputy Managing Editor

fiona.shorrt@thieme.de

Science of Synthesis, Volume 1 [Compounds with Transition Metal—Carbon-Bonds and Compounds of Groups 10–8 (Ni, Pd, Pt, Co, Rh, Ir, Fe, Ru, Os)] was published on August 29th, 2001. This volume was launched at the 11th International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS 11), Taipei, Taiwan: July 22nd–July 26th and the 18th International Congress of Heterocyclic Chemistry (18th



ICHC), Yokohama, Japan: July 29th–August 3rd, where a special preview volume was put on display. Thieme organized meals at both conferences to celebrate the completion of this project. Among the many attendees were Professor Barry Trost (Editorial Board Member responsible for Volume 1), Professor Mark Lautens (Volume Editor), Professor John Montgomery (Author), and Professor Iwao Ojima (Author).

The editorial office is completing Volumes 4 [Compounds of Group 15 (As, Sb, Bi) and Silicon Compounds – Fleming] and 11 [Five-Membered Heteroarenes with One Halogen and One Additional Heteroatom – Schaumann] currently. Both volumes are expected to be published this year.

Many members of the editorial team attended several different conferences over the last few months. Dr. Karen Muirhead and Leigh Murray attended the 17th American Peptide Symposium (17th APS) in San Diego, USA: June 9th–June 14th. Dr. Ayse Abdullah attended the Xth International Conference on the Coordination and Organometallic Chemistry of Germanium, Tin, and Lead (ICCOG-GTL-10), Bordeaux, France: July 8th–July 12th. Dr. M. Fiona Shortt and Lindsey Sturdy were present at the OMCOS 11 and 18th ICHC conferences for the launch of Volume 1.



Barry Trost and Mark Lautens presenting Volume 1 at the 18th ICHC conference in Yokohama, Japan.

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Editorial staff news:

Dr. Susanna Stephen, who completed her PhD at the University of Bristol, joined the editorial team as an assistant scientific editor in June.



Susanna Stephen

Jennifer Mazzuchi, Operations Assistant, left the editorial team in September to return home to the USA. Jennifer was involved in the coordination of the *Science of Synthesis* newsletter and helping out with administrative tasks. We would like to wish Jennifer the best of luck for the future. Dr. Katharine Bray, Assistant Scientific Editor, will be responsible for the newsletter.

Personal News

Prof. Ernst Schaumann, member of the *Science of Synthesis* editorial board, has been elected to be a member in the Section of Mathematics and Natural Sciences of the Braunschweigischen Scientific Society.

Kudos to the following recipients of awards administered by the ACS for 2002: 1998 Thieme–IUPAC Prize awardee Andrew G. Myers (Harvard University) the ACS Award for Creative Work in Synthetic Organic Chemistry, *Houben–Weyl* author Victor J. Hruby (University of Arizona) The Ralph F. Hirschmann Award in Peptide Chemistry, and 2000 Thieme–IUPAC Prize awardee Alois Fürstner (Max Planck Institut für Kohlenforschung) an Arthur C. Cope Scholar Award. The awards will be presented at the 223rd or 224th ACS national meetings in Orlando and Boston, 2002.

It is with great regret that we inform you of the deaths of Dr. Günter Hauff and Dr. H. G. Padeken.

Dr. Günter Hauff, CEO President of the Thieme group of publishing houses, deceased on 19th April 2001. Dr. Günter Hauff entered into Thieme in 1952 and over last fifty years determined the success of Thieme. Over the last few years the publishing house has been managed by his son, Albrecht Hauff, although Dr. Günter Hauff still retained an active involvement in the publishing house.

Dr. H. G. Padeken was for over 40 years the main driving force for *Houben–Weyl*. The 4th edition and the E-series are entirely his achievements. He worked until his last few days and succeeded in finishing the index volumes. *Houben–Weyl* E 23 o/p will be the interface for the electronic version of *Houben–Weyl*, so his lifetime achievement will be made available to a new generation of chemists.

Volume 1 Authors Celebrate Publication



Prof. Lautens, Prof. Montgomery, and Mrs. Montgomery



Prof. and Mrs. Ojima

Review of Volume 10 in Synthesis

Volume 10, Category 2 *Heteranes and Related Ring Systems*, edited by E. J. Thomas, was the first volume of *Science of Synthesis* to be published (in 2000). A review of this volume by Erick M. Carreira appeared in the Thieme journal *Synthesis* this year, and the following quotes have been reprinted from this:

“the first installment in what promises to be a superb, valuable series for researchers across the numerous disciplines that constitute the modern chemical sciences... Volume 10 of the *Science of Synthesis* goes well beyond being just a database... One is immediately impressed with the extensive up-to-date citations that extend well into 1998... the tome embodies the high standards in presentation and scientific organization that the community has come to expect from its publishers Thieme... it is certainly comprehensive and extensive... it provides a valuable compendium of heteroaromatic chemistry organized in a scholarly fashion that cannot be found in the best of electronic databases... the inclusion of useful and reliable methods and accompanying variants is certainly thorough and expansive... The attention to detail is evident in every feature of the volume”

“In summary, Volume 10 in the *Science of Synthesis* series provides a treasured database with a level of organization that will make a welcome addition to the field. It will be indispensable to any serious modern practitioner chemical synthesis in industrial and academic institutions in the varied disciplines of chemical sciences. The tome should be invaluable to discovery, medicinal, and process chemists alike, providing a wealth of information and data in conveniently accessed form.”

Synthesis 2001, No. 4, 669–670. Erick M. Carreira, Zürich, Switzerland.

Nobel Prize in Chemistry 2001 to Ryoji Noyori

Dear Ryoji,

In the evening hours of October 10 marvelous news arrived from Stockholm. The Royal Swedish Academy of Sciences awarded the Nobel Prize 2001 in Chemistry to three chemists: Dr. William S. Knowles (Monsanto Company, St. Louis, USA) and Prof. Ryoji Noyori (Nagoya University, Japan) for “their work on chirally catalyzed hydrogenation reactions”, and to Prof. K. Barry Sharpless (Scripps Research Institute, La Jolla, USA) for “his work on chirally catalyzed oxidation reactions”. The Nobel judges said that the prize-winning discoveries made by the three organic chemists have had a very great impact on academic research and the development of new drugs and other biologically active components. Thus, to the delight of chemists all over the world and myself personally, three grandmasters of the most vital and promising branch of chemistry were awarded: already now catalysis is used in the production of over 7000 compounds worth over \$ 3 trillion globally.

I am deeply honored to have the opportunity to most cordially congratulate you, dear Ryoji, on behalf of the editorial board, volume editors, authors, advisory board, and editorial office of *Science of Synthesis* for having been awarded the Nobel Prize. We are very glad that you as a member of the editorial board share with us your precision of thought, clarity of expression, your boundless energy, your personal warmth, modesty, and humor for the benefit and success of *Science of Synthesis*. We look forward to many inspiring board meetings with you in the many years to come.

A few months ago, when reading the special issue of Thieme's SYNLETT dedicated to you and edited by your Nagoya friend and colleague Prof. Hisashi Yamamoto, we thoroughly enjoyed your hand-written love declaration to organic chemistry describing it as “beautiful, exciting, and beneficial to humankind” and

saying “*In view of the inherent significance of our science, it is now important to make its methods more practical*”. Industrial chemists loved to read your statement! As you have been tremendously successful in this crucial endeavor, let's read Hishashi's brilliant *Laudatio* for you, reprinted here from the same SYNLETT issue with his kind permission:

“Professor Noyori is considered the premier synthetic chemist of our times and has made splendid contributions to the creation of the organic chemistry of the 21st century. During his career, his research has ranged broadly and has included new synthetic methods, the synthesis of biologically active compounds, stereoselective reactions, new reaction media, organometallic chemistry and homogeneous catalysis. Innovation and creativity are the hallmarks of Professor Noyori's scientific achievements in all of these areas. Applications of his original and versatile chemistry have allowed him and other scientists to realize truly efficient syntheses of

organic molecules of theoretical and practical importance.

Of particular note is his brilliant work in the development of asymmetric catalysis. In 1966, he reported the first example of a homogeneous asymmetric catalysis by well-defined transition metal complexes when he discovered the enantioselective cyclopropanation of olefins with diazoacetates in the presence of a chiral Schiff base-Cu(II) complex. In the early 1980s, Professor Noyori devised a number of transition metal catalysts containing a new atropisomeric chiral diphosphine, BINAP, which have proven remarkably effective in a series of asymmetric transformations. This invention provided a major breakthrough in stereoselective organic synthesis. In particular, his discovery of BINAP-Ru(II) complex catalysts led to stereoselective hydrogenation of wide-ranging olefinic and ketonic substrates. A variety of terpenes, vitamins, β -lactam antibiotics, α - and β -amino acids, isoquinoline alkaloids, and other compounds of bio-



Born in Hyogo Prefecture, Japan; September 3, 1938.

Bachelor, Kyoto University, 1961. Master, Kyoto University, 1963. Ph.D., Kyoto University, 1967. Postdoctoral Fellow, Harvard University, 1969–1970.

Kyoto University: Instructor, 1963–1968. Nagoya University: Associate Professor, 1968–1972. Professor, 1972–present. Director, Chemical Instrument Center, 1979–1991. Dean, Graduate School of Science, 1997–1999. Director, Research Center for Materials Science, 2000–present.

The Research Development Corporation of Japan: Director of the ERATO Molecular Catalysis Project, 1991–1996. Ministry of Education, Science, Sports and Culture: Science Advisor, 1992–1996. Ministry of Education, Science, Sports and Culture: Member of Scientific Council, 1996–present. Kyushu University: Professor (adjunct) 1993–1996. Japan Society for the Promotion of Science: Committee Chairman, Research for the Future Program on “Advanced Processes”, 1996–present. The Society of Synthetic Organic Chemistry, Japan: Vice President, 1994–1996. President, 1997–1999. The Chemical Society of Japan: President-Elect, 2001.

Honorary Degrees: Technische Universität München (1995). Université de Rennes 1 (2000).

Fellowship and Membership: Fellow, American Association for the Advancement of Science (1996). Honorary Member, Chemical Society of Japan (1998). Honorary Member, Royal Society of Chemistry (London) (2000).

Honored as a Person of Cultural Merit (1998) and awarded the Order of Culture (2000) from the Japanese Emperor/Government.

Awards: The Chemical Society of Japan Award for the Young Chemists (1972). The Matsunaga Prize (Matsunaga Memorial Foundation, Japan 1978). The Chunichi Cultural Prize (Chunichi Newspaper Co., Japan 1982). The Chemical Society of Japan Award (1985). The Naito Foundation Research Foundation Research Prize (Naito Science Foundation, Japan, 1988). The Fluka Prize, Reagent of the Year (Fluka Chemie AG, Switzerland, 1989). The Centenary Medal (The Royal Chemical Society, London, 1990). The Toray Science & Technology Prize (Toray Science Foundation, Japan, 1990). The Merck-Schuchardt Chair (BOSS Symposium, Belgium, 1990). The J. G. Kirkwood Award (Yale University, 1991). The Asahi Prize (Asahi Culture Foundation, Japan, 1992). Tetrahedron Prize for Creativity in Organic Chemistry (Pergamon Press, UK, 1993). The Keimei Life Science Prize (Keimei Foundation Japan, 1994). The Japan Academy Prize (1995). The Arthur C. Cope Scholar Award (ACS, 1996). Bonn Chemistry Award (University of Bonn and Pinguin Foundation, 1996). The Arthur C. Cope Award (ACS, 1997). The Chirality Medal (International Symposium on Chiral Discrimination, 1997). The George Kenner Award (University of Liverpool, 1997). The King Faisal International Prize for Science (Saudi Arabia, 1999). The Cliff S. Hamilton Award (University of Nebraska, 1999). ISI Citation Laureate Award (ISI/Thomson Scientific Inc., 2000). The Special Award (The Society of Synthetic Organic Chemistry, Japan, 2001). The Wolf Prize in Chemistry (Wolf Foundation, Israel, 2001). The Roger Adams Award in Organic Chemistry (ACS, 2001). The Nobel Prize in Chemistry (The Royal Swedish Academy of Sciences, 2001).

logical interest such as carnitine and antiinflammatory naproxen are accessible using this hydrogenation method. In 1995, Professor Noyori found a new chiral diphosphine/diamine Ru complex catalyst that effects a long-sought carbonyl-selective hydrogenation without affecting a co-existing olefinic or acetylenic linkage. This new method allows enantioselective hydrogenation of a series of simple olefinic and aromatic ketones to the secondary alcohols with high ee's. This new hydrogenation is very clean, operationally simple, economical, environmentally friendly, and can be conducted on any scale with a substantially high substrate/catalyst ratio and very high substrate concentration in organic solvents. The BINAP-Ru catalyzed hydrogenation of acetol to (*R*)-1,2-propanediol is now used for the large-scale synthesis of levofloxacin, an antibacterial quinolone. The reaction of racemic methyl α -(benzamidomethyl)acetoacetate (dynamic kinetic resolution) is also being utilized in the industrial production of a chiral β -hydroxy ester, which serves as a common intermediate for the synthesis of carbapenem antibiotics. He also invented phosphine- and nonphosphine-based chiral Ru(II) catalysts for efficient transfer hydrogenation of ketones with 2-propanol or a formic acid triethylamine mixture as hydrogen donors.

Professor Noyori's BINAP-Rh(I) complexes have proved to effect highly enantioselective isomerization of diethylgeranylamine to (*R*)-citronellal enamine. This asymmetric reaction working on a 9-ton scale is a key step in the industrial synthesis of (-)-menthol, the world's largest application of asymmetric catalysis.

In 1986, Professor Noyori achieved the first highly enantioselective addition of dialkylzincs to aldehydes using a catalytic quantity of a chiral β -dialkylamino alcohol, where alkylation products with high enantiomeric excesses are accessible with the partially resolved chiral ancillary. The mechanism of this striking chirality amplification was elucidated at the molecular structure level in 1989. This is based on the self- and nonself recognition of asymmetric catalysts, and the phenomenon has been proven to be very general.

Chiral binaphthol-modified lithium aluminum hydride reagents, elaborated by Professor Noyori in the

late 1970s, exhibit extremely high enantioselection in the reduction of an extensive array of prochiral carbonyl compounds. This asymmetric reduction greatly facilitated the current commercial synthesis of prostaglandins. His selective organometallic methodologies using organocopper, -tin, and -zinc reagents, combined with his asymmetric reduction procedure, realized the long-sought three-component coupling synthesis of prostaglandins, which allows flexible preparation of both natural and unnatural products. Some notable applications include the controlled synthesis of therapeutically significant isocarbacyclin, a stable prostacyclin analogue, and the development of APNIC, a photoaffinity probe for a prostacyclin receptor.

Professor Noyori's contribution to organic chemistry is not limited to asymmetric synthesis. In 1994, he demonstrated for the first time the remarkable utility of supercritical carbon dioxide as a medium for homogeneous catalysis by accomplishing its own fixation by Ru catalyzed hydrogenation to produce formic acid, methyl formate, and dimethylformamide in extremely high turnover numbers, up to 420,000 mol/mol Ru.

Professor Noyori's intense interest in metallo-organic chemistry drove him to devise novel methods in nucleic acid synthesis as well. Thus, his invention in solution-phase chemistry includes O-selective phosphorylation of nucleosides without NH_2 blocking, efficient formation of internucleotide linkage, and nonaqueous oxidation of phosphites, which results in a straightforward entry to biologically significant 2',5'-linked oligoadenylates, branch-type oligoribonucleotides, and other artificial analogues. In 1990, he achieved the first, very efficient synthesis of solid-anchored DNA oligomers via organopalladium chemistry utilizing allylic protective groups.

Organosilicon chemistry is another of his interests. Professor Noyori demonstrated that trimethylsilyl triflate acts as a versatile catalyst in numerous organic reactions including aldol-type reaction and glycosylation reactions. He developed the chemistry of tris(dialkylamino)sulfonium enolates (ion-paired enolates rather than ordinary Lewis acid-interacting enolates) undergoing a uniquely stereoselective aldol reaction.

In his early days in Nagoya, Professor Noyori found the iron carbonyl/polybromo ketone reactions which allow direct construction of five- and seven-membered carbocycles in a [3 + 2] and [3 + 4] manner, respectively. The utility has been amply demonstrated by the synthesis of tropenoids, C-nucleosides, and other natural carbocycles. He was intrigued by the chemistry of s-framed strained hydrocarbon systems in the presence of Ni(0) complexes and proposed the significance of metallacycle mechanisms. He also elucidated the behavior of epoxides and biologically important endoperoxides under the influence of transition metal complexes."

In a short personal account I remember that it was this last mentioned field of your early chemical interest, which led us in 1973 to exchange our first letters about an issue as curious as NMR long-range couplings over five zick-zack single bonds! Since we then first met personally in Louvaine-La-Neuve 19 years ago, I have always felt it a great honor to be friend of you, a "very modest scientist of oriental origin" (as you described yourself in your last letter), to meet you frequently in Basel and in our house in Riehen together with your charming wife, at various meetings around the world, during inspiring visits to Japan, and to be impressed by the mixture of admirable intuition and profound mechanistic insight in your lectures.

For the days after your well-deserved present exposure to the public, I sincerely wish you continuing success, which should be as enjoyable, productive and rewarding as it has been so far.

Dear Ryoji, I send you our warmest congratulation on this special occasion.

Yours truly,

Daniel



Daniel Bellus
Editorial Board member
of Science of Synthesis

During the summer of 2001, the planning for *Science of Synthesis* Volumes 1–17 was finished (Categories 1 and 2). Three volumes have appeared (1, 9, and 10) and others are close to being finished or are well under way. Volumes 18 and 19 of Category 3, edited by Julian Knight and Shun-Ichi Murahashi, respectively, were reported on in Issue 2 of the Newsletter (June 2001). Volume 21 focuses on the amide linkage and is being edited by one of the foremost authorities in the field, Steve Weinreb, as reported in Issue 1 of the Newsletter (March 2001).

Volume 23, Compounds with Three Carbon—Heteroatom Bonds: Ketenes and Derivatives

Rick L. Danheiser is well known throughout the world for his discoveries in the areas of annulation strategies and cycloadditions, including the use of ketenes as reagents. The symposium he organized for the Pacifichem 2000 in Honolulu on Cycloaddition and Annulation Strategies



was a highlight of that conference for synthetic chemists and kept many away from the less serious attractions offered by the famous Waikiki Beach. In spite of his youthful appearance, Rick Danheiser has made significant contributions to synthetic science for almost 30 years, starting with the development of the “Stork–Danheiser Alkylation” as an undergraduate student at Columbia College. As a graduate student with E. J. Corey at Harvard, his work involved the first total synthesis of the diterpene plant growth hormone gibberellic acid, a daunting task that had been one of the major synthetic challenges of the 70s. In 1978, at the age of 26, Danheiser joined the faculty at the Massachusetts Institute of Technology, where he is now the Arthur C. Cope Professor of Chemistry and Associate Head of the Department. Danheiser’s research contributions over the years include highly stereoselective [4 + 1] cyclopentene annulations based on oxyanion- and carban-

ion-accelerated vinylcyclopropane rearrangements; the application of organosilanes (e.g., allenylsilanes, propargylsilanes, and allylsilanes) in a general [3 + 2] annulation strategy for the synthesis of five-membered carbocycles and heterocycles (the “Danheiser Annulation”); a [4 + 4] annulation route to eight-membered carbocycles based on a cascade of pericyclic reactions; aromatic annulation strategies based on pericyclic transformations of vinylketenes; and methods for the synthesis of aromatic and dihydroaromatic compounds based on cycloadditions of highly unsaturated conjugated molecules such as 1,3-enynes. Natural products synthesized in his laboratory at MIT include the neurotoxic alkaloid anatoxin *a*, the immunosuppressant agent mycophenolic acid, the host defense stimulant maesanin, and a number of diterpene quinones derived from the Chinese traditional medicine *Dan Shen*. Current investigations in his laboratory involve the development of new strategies for the synthesis of complex molecules and their application in the total synthesis of natural products. His accomplishments have been recognized with a number of fellowships, honors and awards, including the Cope Scholar Award of the American Chemical Society. He serves as consultant for a number of pharmaceutical companies and in collaboration with William Roush has presented a short course on “Recent Advances in Organic Synthesis Methodology” at more than 25 companies in the U.S. and Europe during the past 10 years. Rick Danheiser is the author of numerous research articles and reviews. His extensive editorial experience includes serving on the Editorial Advisory Board of the *Journal of Organic Chemistry* (1989–1994), the Editorial Board of the *Encyclopedia of Reagents for Organic Synthesis*, and the *Organic Syntheses* Board of Editors (1996–present). Danheiser is known for his rigorous thinking and authoritative knowledge. While reviewing the *Science of Synthesis* Guidebook even before becoming a Volume Editor, he made important suggestions for improvements, which have resulted in the incorporation of a new Rule 17 in the Guidebook scheduled to appear in January 2002. Last but not least,

Rick Danheiser is a dedicated teacher and also has a special interest in laboratory safety; his commitment in both areas has been recognized with several awards and honors.



Daniel Bellus is the responsible Editorial Board Member for *Science of Synthesis* Volume 23.

Volume 24, Compounds with Three Carbon—Heteroatom Bonds: Ketene Acetals and Yne—X Compounds

Armin de Meijere is known worldwide because of his significant contributions in the areas of small ring chemistry and the use of organometallics in organic synthesis. Small rings have accompanied de Meijere from the time of his Ph.D. work at the University of Göttingen with W. Lüttke (1966), where the focus was more on their physical organic chemistry, up to today as he applies his understanding of their chemical and physical properties to develop new small ring building blocks for use in the synthesis of natural and nonnatural compounds. An appreciation for and perception of the underlying physical and chemical principles of organic chemistry was strengthened by a postdoctoral fellowship with K. B. Wiberg from 1967–1969. From 1969–1977, de Meijere was a lecturer and then adjunct professor of organic chemistry at Göttingen, followed by a position as full professor at the University of Hamburg from 1977–1989. In 1989 he returned to Göttingen as full professor. The research interests of Armin de Meijere have developed over the years to include new catalytic transformations, new organometallic complexes and their chemical transformations, the use of organometallic complexes, and catalysts in organic synthesis, palladium-catalyzed cascade reactions and titanium-mediated transformations of carbon-



yl compounds, as well as the study of carbon compounds and organometallic complexes with unconventional chemical and physical properties. De Meijere is a world traveler and has had visiting professorships at the University of Wisconsin, Technion – Israel Institute of Technology, Princeton University, Université d’Aix-Marseille III, University of Florence, Ecole Normale Supérieure, Paris, the University of Colorado, and the University of Florida. He has received numerous fellowships, honors, and

awards during his extremely productive career, which currently includes over 450 original papers, review articles, and book chapters and over 490 lectures at international and national conferences, research institutes and industrial facilities all over the world. Over the years, numerous chemists have worked in the de Meijere laboratories, as graduate students or postdocs, and have then moved on to important positions at universities, in industry, and also in publishing. Armin de Meijere himself has exten-

sive experience as an editor, serving on the Editorial Boards of several journals and periodicals and as editor of major reference works including the *Handbook of Palladium Chemistry*. He was editor of the comprehensive set of 6 volumes on cyclopropanes and cyclobutanes in *Houben–Weyl – Methods of Organic Chemistry* (Volume E 17).

Ernst Schaumann is the responsible Editorial Board Member for *Science of Synthesis* Volume 24.

Eric N. Jacobsen Joins the Editorial Board of Science of Synthesis

Dr. Joe P. Richmond, Scientific Editor



It is certainly no exaggeration to describe Eric Jacobsen as the crown prince of asymmetric catalysis. It is not surprising, therefore, that C&EN went to him for a commentary

on the selection of the 2001 Nobel Prize winners (see <http://pubs.acs.org/cen/topstory/7942/7942notw1.html> and in print, C&EN, October 15, 2001, Volume 79, Number 42, p. 5). It seems fitting, therefore, that Jacobsen has joined one of those winners, Ryoji Noyori, and the other Nobel-Prize-caliber members of the *Science of Synthesis* Editorial Board.

In 1990, having just turned 30, Jacobsen solved one of the great challenges to organic synthesis, following the famous Sharpless epoxidation of allylic alcohols, namely the catalytic asymmetric epoxidation of unfunctionalized olefins. Today, the “Jacobsen catalyst” has become a household term for synthetic chemists and the “Jacobsen epoxidation” has been developed into a highly efficient and practical methodology, applicable up to the ton scale. This early success was by no means the peak in a brilliant career, but rather appears to have only been the primer that has gotten the pump going. In subsequent years, Jacobsen and his group have continued to produce one outstanding breakthrough after the other, including enantioselective sulfide oxidation, catalytic asymmetric aziridination, catalytic asymmetric hetero-Diels-Alder reactions, enantioselective catalytic hydrocyanation of imines, and kinetic resolution of epoxides by hydrolytic kinetic resolu-

tion. The development of new catalytic methods has been accompanied by their application in the total synthesis of complex targets and by studies of the mechanisms of the catalysts discovered. It is in fact the latter facet of Jacobsen’s research program that sets him apart from most synthetic chemists and makes him equally at home with both inorganic and organic audiences. His intensive concern with the mechanistic aspects of organic and transition metal chemistry has made him a world leader in new reaction design.

Jacobsen’s roots are in New York City; he received his B.S. degree from New York University, where his enthusiasm for chemistry was catalyzed by his undergraduate research supervisor, Yorke E. Rhodes. His graduate work with Robert G. Bergman at the University of California, Berkeley, was focused on synthetic and mechanistic organometallic chemistry. The formative years of Jacobsen’s early career were rounded out with his two-year postdoctoral stay in the laboratories of K. Barry Sharpless at the Massachusetts Institute of Technology, where he worked on the development of the osmium tetroxide catalytic asymmetric dihydroxylation of olefins. His independent research started at the University of Illinois, Urbana-Champaign, where he was an assistant professor from 1988–1991 and an associate professor from 1991–1993. Then at the age of 33, he became a full professor at Harvard University, where he is now Sheldon Emery Professor of Chemistry.

Jacobsen’s achievements are documented in almost 100 research publications, reviews, and book chapters and also in 9 patents. His discovery, applications, and mecha-

nistic studies of new catalytic reactions of practical value have been recognized with numerous honors and awards, including the NSF Presidential Young Investigator Award (1990), a Camille and Henry Dreyfus Teacher–Scholar Award (1992), the Fluka Prize “Reagent of the Year” (1994), an Arthur C. Cope Scholar Award (1994), the Thieme–IUPAC Award in Synthetic Organic Chemistry (1996), and the ACS Award for Creative Work in Organic Synthesis (2001). He has held over 26 plenary and named lectureships throughout the world and over 215 invited lectures at conferences, meetings, universities, and companies. Jacobsen is an enthusiastic teacher and in collaboration with Stephen L. Buchwald has held a short course with the title “Organometallic Metal Chemistry and its Application to Organic Synthesis” at more than 20 companies in the U.S. and Europe. Jacobsen is a consultant at Seppracor and at Merck, is SAB and BOD member at Rhodia ChiRex, and is co-founder and SAB member at Versicor. He is an experienced editor and serves on the Editorial Advisory Boards of *Synthesis*, *Synlett*, *Organic Letters*, *Journal of Combinatorial Chemistry*, *Journal of Molecular Catalysis*, and *Current Opinion in Drug Discovery & Development*. He is a member of the Editorial Board of *Advanced Synthesis & Catalysis*. With Andreas Pfaltz and Hisashi Yamamoto, he edited the major reference work *Comprehensive Asymmetric Catalysis*.

To round out the picture, Jacobsen is married and has two daughters. In his spare time (can you believe that!), he is an avid distance runner.

Publisher Albrecht Hauff on Science of Synthesis and Chemistry

Albrecht Hauff is chairman and CEO of the Thieme Publishing Group. Before studying business, economics, and administration, Albrecht Hauff, who is now 47, underwent thorough training in publishing. He gained experience as a trainee publisher in Great Britain and in the United States of America. Currently, jointly with Dr. Wolfgang Knüppe, he is General Manager of the Thieme Publishing Group. His activities as a publisher have also promoted close ties to developments in the chemistry-publishing sphere.



experiments I poured spirit into an open flame. Anyone (at that time I was an exception) knows what was bound to happen, there was an explosion and a huge jet of flame, which burnt my hands quite severely. The room was littered with debris of fire. After this “successful” experiment I have preferred to keep away from “applied” chemistry and to confine myself to promoting it from a safe distance.

Mr. Hauff, how does chemistry feature in your publishing group?

Chemistry is a long-standing Thieme domain, originating with the two gentlemen Houben and Weyl who, in 1909, published the first single-volume(!) edition of *Houben–Weyl/Science of Synthesis*. Since then, chemistry has become increasingly important in natural science and its importance has likewise grown in our publishing programme, so that today it is one of the two main pillars of the Thieme Publishing Group, the other one being of course medicine as it has always been. *Houben–Weyl/Science of Synthesis* occupies a key position. Today chemistry is one of the hubs of science, it supplies direct answers to crucial problems – substantially via reference works such as *Houben–Weyl/Science of Synthesis*. Also, last but by no means least chemistry is the keystone in the understanding of the structure of the universe.

Do you have a personal affiliation with chemistry?

When I was a youngster my parents presented me with a chemistry hobby set and I was fascinated. In one of my

How many Science of Synthesis volumes are on your bookshelf?
A bookshelf isn't of much use, a library would be more appropriate. The 4th edition comprises of 180 volumes and almost every one of them I have held in my hands at least once. It is not exactly bedtime reading, “lighter” reading matter would be preferable for that purpose.

What do you particularly like about the 5th Science of Synthesis edition?

I am impressed by the international network of outstanding board members, volume editors, and more than 400 authors that make up the new edition to incorporate their knowledge and experience. This modifies our pattern of work in our publishing department, as it has now become much more international with the 5th edition of *Houben–Weyl/Science of Synthesis*. During the past few years our editorial and marketing divisions have been present at conferences and book fairs all over Europe, the USA, and Asia. In addition I am pleased with our trend-setting process of publication which is 100% electronic and hence medium-neutral, exploring not only the new avenues of information communication, but also enabling worldwide problem-free exchange of information with customers and authors.

Welcome to New Authors

The *Science of Synthesis* team would like to extend a warm welcome to the following new authors:

Volume 8

Prof. R. B. Holman (Western Kentucky University, USA)
Prof. D. Slocum (Western Kentucky University, USA)

Volume 14

Dr. W.-D. Rudolf (Universität Halle, Germany)

Volume 15

Dr. H. Ihmels (Universität Würzburg, Germany)
Dr. P. A. Keller (University of Wollongong, Australia)
Prof. M. Kozowski (University of Pennsylvania, USA)
Dr. R. D. Larsen (Merck Research Laboratories, USA)

Volume 18

Dr. M. L. Birsa (Bar-Ilan University, Israel)
Prof. S. Braverman (Bar-Ilan University, Israel)
Dr. M. Cherkinsjy (Bar-Ilan University, Israel)
Prof. N. Furukawa (Foundation for Advancement of International Science, Japan)
Dr. T. L. Gilchrist (University of Liverpool, UK)
Dr. B. A. Kashemirov (University of Southern California, USA)
Prof. C. E. McKenna (University of Southern California, USA)
Dr. P. J. Murphy (University of Wales, Bangor, UK)
Dr. S. Sato (Foundation for Advancement of International Science, Japan)
Dr. Y.-q. Wu (Guildford Pharmaceuticals Inc., USA)

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The two most prominent developments of the *Science of Synthesis* project this summer has been the publication of Volume 1 and the final steps in the development of the electronic version. Throughout the summer we have participated in various conferences all over the world and in our conference schedule, as well as those of general chemical interest, such as the ACS in Chicago in August, we included those that dealt with special topics closely related to the categories of *Science of Synthesis* we are currently publishing. In addition to presenting all volumes of *Science of Synthesis* available in print, we have always offered a demonstration of the electronic version.

One of the highlights has for sure been the 11th Organometallic Chemistry directed towards Organic Synthesis meeting (OMCOS-11) in Taipei. About 800 scientists met in "The Grand Hotel" to discuss the latest developments in their fields. In the 12th floor of the Chinese place styled hotel, the Thieme booth had to compete

with an overwhelming view on the 2.8 million metropolis. Knowing that this might become a hard job, we produced a very effective weapon especially for that purpose: A preview copy of Volume 1 (some 1200 pages). Due to the fitting content (Organometallics) and the presence of Mark Lautens, the volume editor, this volume gathered huge interest and admiration from the attendees and was heavily used throughout the conference. Now it has its honorary place on the shelf of Mark Lautens. Furthermore, we demonstrated the electronic version of *Science of Synthesis* directly at the booth which also reached a similar level of interest.

OMCOS-12 is to be held in Toronto in 2003 and organised by Mark Lautens. Thieme as a main sponsor will be supporting him, especially since, all six volumes of Category 1 (Organometallics) will be published and will also be accessible online.

Directly following the OMCOS-11, the 18th International Congress of Heterocyclic Chemistry was held in Yokohama, Japan. Attended by roughly 1000 participants, this was one of the biggest ICHC's ever and we were happy to be able to exhibit at this high profile conference. Again we faced hard competition for the attention of the attendees, but this time it was more the free beer offered during the poster session than the landscape. Anyway, we proved to be an interesting part of this conference and many participants made use of the chance to have a closer look at Volumes 1, 9, and 10, as well as the online version. As happened at the OMCOS, we took the opportunity to celebrate the availability of Volume 1 by inviting our editorial board members, volume editors, and authors to a *Science of Synthesis* dinner one evening. We will keep this tradition, and hope to be able to exchange, by this means, ideas and visions with as many of you as possible. The 19th ICHC will be held in 2003 in Colorado and we will be happy to proudly present the completed Category 2 (Heteroarenes), printed and electronically, to those 1000 or more scientists, who will be attending this event.

A totally different kind of meeting, the 221st ACS meeting, was held in a totally different part of the world, in Chicago. Thieme exhibited there, together with about 500 other com-

panies, at the end of August. For the first time, we also took part in the poster session of the Chemical Information Division of the ACS. The presentation of our well-known poster, outlining the evolution from *Houben-Weyl* to *Science of Synthesis*, covering a period of nearly 100 years, generated a good response. Due to the vast amount of visitors to the exhibition, demonstrations showing *Science of Synthesis* online were nearly non-stop.

Another great event has been the Noyori Forum – MeRinOS Joint Meeting on Fundamental and Applied Aspects of Organic Synthesis (nmm-1), in Houffalize, Belgium, at the end of September. About 120 leaders from industry and academia from Europe and Japan, exchanged their views in a holiday resort in the south of Belgium. The schedule was packed with excellent talks covering industrial, as well as academic aspects, but still left enough time for personal conversation. *Science of Synthesis* online was presented in the lecture hall to the full audience. This presentation raised lots of interest and the breaks during the following days were used to discuss special questions. All three published volumes, 1, 9, and 10 were shown in electronic format. Nmm-2 is to be held in Japan and we hope to meet you there!

Along with our conference activities we are constantly working on our homepage. So stop at www.science-of-synthesis.com from time to time to keep in touch with our permanently developing project.



Thieme Exhibition at OMCOS-11 Taipei.