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Topics in Heterocyclic Chemistry

Aims and Scope

The series Topics in Heterocyclic Chemistry presents critical reviews on present and future trends in the research of heterocyclic compounds. Overall the scope is to cover topics dealing with all areas within heterocyclic chemistry, both experimental and theoretical, of interest to the general heterocyclic chemistry community.

The series consists of topic related volumes edited by renowned editors with contributions of experts in the field.

More information about this series at http://www.springer.com/series/7081

Jean-Christophe M. Monbaliu
Editor

The Chemistry of Benzotriazole Derivatives

A Tribute to Alan Roy Katritzky

With contributions by

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Dedicated to Alan Roy Katritzky

Preface

Each chapter within this volume critically surveys the applications of benzotriazole derivatives in a variety of important synthetic applications ranging from heterocyclic chemistry to peptide constructs. The most significant developments and concepts in benzotriazole methodology are presented using selected examples. Each chapter is designed to provide the non-specialist reader with all the important concepts and methodology that led to the development of a general benzotriazole methodology. Beyond the concepts and important developments, these contributions also offer an outlook on potential future developments in benzotriazole chemistry.

Chapter "Preparation, Reactivity, and Synthetic Utility of Simple Benzotriazole Derivatives" introduces the reader with the specific reactivity of benzotriazole and its simple derivatives. The preparation, synthetic properties and applications of a representative set of important and versatile benzotriazole derivatives are illustrated. Chapter "Acylbenzotriazoles: New Allies for Short Linear and Cyclic Peptide Constructs" gathers the most important advances in the preparation and use of acylbenzotriazole derivatives for the preparation of oligopeptide constructs. Chapter "Benzotriazole-Based Strategies Towards Peptidomimetics, Conjugates and Other Peptide Derivatives" extends the discussion on the versatility of acylbenzotriazole derivatives towards the preparation of peptidomimetics, conjugates and other peptide derivatives. Chapter "Benzotriazole-Mediated Synthesis of Oxygen Containing Heterocycles" discusses benzotriazole-mediated strategies towards oxygen-containing heterocycles, and Chapter "Benzotriazole-Mediated Synthesis of Nitrogen Containing Heterocycles" reviews benzotriazole-mediated strategies towards nitrogen-containing heterocycles. Last but not least, Chapter "Benzotriazole: Much More Than Just Synthetic Heterocyclic Chemistry" regroups various applications of benzotriazole and its derivatives to medicinal chemistry and materials sciences.

Dedication

Every domain in society has its own icons who are well known for their contributions and their leadership in the field. Certainly in sports, the role of icons is enormous and stimulates many youngsters to engage in certain sports.

Also, sciences have their icons.

When talking about heterocyclic synthesis, I believe that no one will doubt that Alan Katritzky is and has been an icon during his career and will stay one for a long time. Together with his good friend Charles Rees, they had a tremendous impact on the field and studied heterocycles in a very systematic way. The numerous books that Alan edited on heterocyclic chemistry organised the field in different classes of heterocycles. Alan studied extensively their specific reactivity, their conformational behaviour, their physicochemical properties and their aromaticity and heterocyclic rearrangements.

Picture: Alan R. Katritzky receives the honorary doctorate at Ghent University in 2001.

Alan Katritzky (born August 18, 1928) was raised and educated in England and prepared his first heterocyclic compound at the age of 15. From 1948 to 1958, he spent time at Oxford, obtaining his degree in 1952 and publishing his first benzotriazole paper in 1953. He performed doctoral work with Sir Robert Robinson and received a PhD in 2 years. In 1957, Alan moved to Cambridge and became the founding fellow of Churchill College, of which Sir John Cockcroft, Nobel Prize winner in 1951 for his work on atom splitting, was the first master. In 1962, Alan

Katritzky moved to the new University of East Anglia in Norwich as founding professor of chemistry where he met Sir Christopher Ingold, member of the Academic Planning Board. Quickly, he became dean of the faculty in East Anglia and succeeded in convincing the authorities to construct a new chemistry building which was opened by her Majesty the Queen. In 1980, Prof. Katritzky moved to Florida as Kenan professor of chemistry where he has been running since then a big international group of postdocs and PhDs studying several aspects of heterocyclic chemistry. Alan passed away on February 10, 2014, in Gainesville after a fully filled life of chemistry.

The contributions of Alan Katritzky to the international scientific literature are elaborate with over 2500 international peer-reviewed papers and numerous book series (*Advances in Heterocyclic Chemistry*, *Comprehensive Heterocyclic Chemistry*, etc.). His scientific drive was exceptional. Up to the last moments, Alan was taking initiatives and leading a big multicultural research group. His knowledge and drive have led to the creation of the Center for Heterocyclic Compounds at the Department of Chemistry in Gainesville, Florida, with a research group of around 50 postdocs and PhDs working on heterocyclic chemistry over the years. Organised as ever, he was able to get the best out of his co-workers and built an impressive network covering all continents. His work was also internationally recognised with more than ten honorary doctorate titles and numerous prestigious awards. His good friend Prof. Al Padwa categorised Alan as a super achiever.

Alan Katritzky also spread the word. He travelled all over the globe and presented his views with a clear voice. As we all remember, Alan did not need a microphone even lecturing in front of hundreds of chemists. He also loved to lecture in other languages since he was eager to learn foreign languages. Not only in academic circles was Alan well known, he was also very well recognised in the chemical industry and has been consulting for all major chemical and pharmaceutical companies in the USA and Europe.

Alan Katritzky was also a person with a great humanitarian spirit. He founded Arkivoc, an electronic scientific journal, in order to give opportunities to developing countries to publish their work for free and also download all other Arkivoc articles for free. He strongly believed that scientific information is key to human and social development and therefore he created Arkivoc. Arkivoc is functioning on a personal donation of Alan and his wife Linde, is supported by the FLOHET conference in Gainesville (Florida, USA) and is run through the efforts of a team of scientists who perform all the editorial work for free. Arkivoc was very close to his heart since he wanted really to help change the world for the better. He wanted to get things done and "bochra" (tomorrow) was not high on the list of his vocabulary.

He was a charismatic mentor of his team of collaborators. With an amazing working power and with firm leadership, diplomacy and British humour, he paved the way for a tremendous scientific career and helped many collaborators throughout their careers. Members and ex-group members were always warmly welcomed by Linde and Alan. Many of us have enjoyed the dinners and the selected excellent wines "at Prof's place".

Alan also enjoyed windsurfing and was an outstanding wine expert, with a huge interest in languages and travelling, but above all, he had an enormous scientific drive and passion for all kinds of science. We will always remember Alan for his incredible scientific memory and amazing personality.

Ghent, Belgium
August 2015

Christian Stevens

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