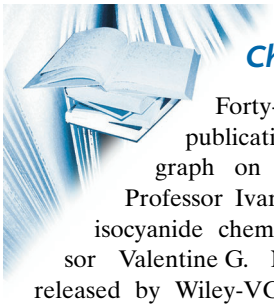

Isocyanide Chemistry

Forty-one years after the publication of the first monograph on isocyanides, edited by Professor Ivar Ugi,[1] a new book on isocyanide chemistry, edited by Professor Valentine G. Nenajdenko, has been released by Wiley-VCH. Generally, thematic books have one of two different fates: they either become classics or sink into oblivion. Which of these fates awaits a book depends on how it has been written. If the authors have tended to describe the trees instead of the forest, the book will need to be updated regularly, whereas if the authors preferred to outline the complexity of the forest, and to give us the opportunity to discover the trees inside, this book, even if not updated, will still be instructive. In my opinion, the book on isocyanides edited by Ugi[1] is a classic, and it earns its favored place on my bookshelves by being a continual source of inspiration.

It was in this mood that I started reading the new book. The book is divided into 16 chapters, 9 of which are concerned with the use of isocyanides in multicomponent reactions. All the chapters have been written by recognized experts in the field, with a remarkably high standard of scientific treatment of the topic. The literature coverage is huge, is up-to-date, and consists mainly—but not entirely—of publications since 1971.

The first chapter deals with the preparation and use of optically active isocyanides, along with a brief account of polyisocyanides and their atropoisomeric properties. Polyisocyanides are later treated in greater depth in Chapter 16. Chapter 2 discusses the reactive properties of isocyanides, and emphasizes the great intrinsic potential of the isocyano group for organic synthesis, in a way that is also addressed to non-specialists.

Chapters 3 and 4 explore the so-called α-acidic isocyanides (TosMIC, isocyanoesters, and isocyanoamides), describing their preparation, properties, and use in both classical and multicomponent reactions. Chapters 5 and 6 deal with the use of carboxylic acid surrogates or amine surrogates in the Ugi–Passerini multicomponent reactions, showing how it is possible to replace those two strategically important inputs to give access to a cornucopia of novel chemical structures.

Chapters 7 and 10 show how to achieve greater molecular complexity, either by joining two or more multicomponent reactions or by carrying out an Ugi reaction followed by one or more post-transformation reactions. Chapter 8, starting from the formation of a zwitterionic adduct from the reaction between an isocyanide and an activated acetylenic compound, covers all the associated multicomponent transformations that have been discovered to date. Chapter 9 shows how isocyanides have been used in several novel multicomponent reactions that are not related to the Ugi–Passerini reaction.

Chapters 11, 12, and 13 discuss the use of isocyanides for the synthesis of various interesting heterocycles, such as pyrroles, benzodiazepins, furans, oxazoles, isooxazoles, thiazoles, imidazoles, pyrazoles, oxadiazoles, triazoles, tetrazoles, benzofurans, benzoimidazoles, indoles, quinolines, and quinoxalines. Finally, Chapters 14 and 15 deal with the formation of complexes between isocyanides and transition metals, and with their special features and applications.

After reading the book, one is impressed by the wide variety of molecular skeletons that can be obtained by the judicious use of isocyanides. If I have to find a slight criticism, it concerns the organization of the book, and the fact that the same reactions and concepts are sometimes repeated in different chapters. Apart from these problems of organization, this is a book of more than 600 pages that is full of information about the reactive properties of isocyanides and the great potential that is available through their skillful use in organic chemistry. The book deserves a high-ranking place on my bookshelf, close to Ugi's book. I am sure that this book will continue for many decades giving inspiration to all chemists who are involved in the use of isocyanides in organic synthesis.

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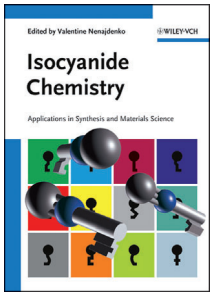
[1] *Isonitrile Chemistry* (Ed.: I. Ugi), Academic Press, New York, **1971**.



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