

During the last few decades, the state of the art in total synthesis has developed tremendously, and I believe it is fair to say that we synthetic chemists can (at least in principle) synthesize a small amount of any given organic molecule, regardless of size and complexity, provided that sharp brains and sufficient manpower, time, and finance are applied. The synthesis of palytoxin is an example among many other beautiful total synthesis achievements that support this statement.

So what is the challenge for today's synthetic chemists? Well, as molecular complexity and size increase, so does the number of chemical transformations required to assemble the target molecule, and usually each of these transformations involves tedious isolation and purification processes. This makes the synthesis of complex molecules highly demanding with regard to resources and time. Furthermore, the loss of material in each transformation and purification step of a multi-step sequence dramatically reduces the overall efficiency. Total syntheses of even medium-sized natural product molecules often require that we start on the multi-gram scale in order to obtain only a few milligrams of the target species.

Thus, there is a great challenge for synthetic chemists to convert academic successes into practical processes that make it possible to synthesize complex organic compounds on the multi-gram scale, and this is what Pellissier's book is all about!

The key to efficiency in constructing optically active complex organic scaffolds is in the development of asymmetric domino/cascade/tandem reactions, which have recently attracted greatly increased interest among chemists. These reactions allow for multiple carbon-carbon and carbon-heteroatom bond formation events in a single continuous process within the same reaction vessel. In addition, they eliminate time-consuming and costly operations such as isolation and purification of synthetic intermediates and steps involving the protection and deprotection of functional groups, thus avoiding conventional stop-and-go synthetic processes.

Although there are numerous papers on domino reactions, there are only a few books that aim to cover this rapidly progressing area in a comprehensive manner. This book by Hélène Pellissier covers the progress of work on domino/cascade/tandem reactions from 2006 up to the present date, and according to the author it is a continuation of Tietze's reviews and books that cover the subject up to 2006.

Overall, this book is well written and well structured, and provides a comprehensive and detailed insight into the research area. The author divides the material into three main sections:

- 1) Reactions based on chiral substrates
- 2) Enantioselective transition metal catalysis
- 3) Enantioselective organocatalysis

After introductory background information about each main chapter, the material is consistently divided into two sub-chapters: the first on one- and two-component cascade reactions, and the second on multi-component reactions. The reactions described in each sub-chapter are then further categorized according to the type of reaction that initiates the cascade or domino sequence. Finally, each reaction is discussed individually in terms of yield and selectivity. In some cases, but not all, the book includes details about the mechanism and the origin of the selectivity.

This nice organization of the material makes it easy to find your way through the book, and the information is substantial, representative, and up-to-date. It impressively shows the importance of domino/cascade/tandem reactions and how they can be efficiently used as a modern tool in advanced asymmetric organic synthesis. However, I think it would have been nice for readers not so familiar with the area to include a general overall introduction describing basic strategies and the problems and limitations of domino/tandem and cascade reactions, as well as definitions and notes about nomenclature.

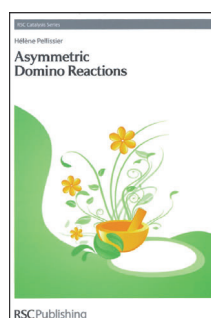
I really enjoyed going through this book, which offers a concise and highly practical view of this increasingly important topic. With the ever-increasing complexity of the target structures in modern society, processes such as those described in Pellissier's book are not just of academic interest but are also of great importance for all types of synthetic industry. In fact, strategies based on asymmetric catalytic domino reactions incorporate at least four of the "twelve principles of green or sustainable chemistry" as a result of their high energy and materials efficiency, minimization of chemical waste products, and operational simplicity.

To conclude, *Asymmetric Domino Reactions* is a rich source for both academic and industrial researchers who are already working in this field, or wish to gain a deeper insight into this rapidly progressing area, and I strongly recommend it.

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