Preface

Asymmetric synthesis, the ability of controlling the three dimensional structure of the molecular architecture has revolutionized chemistry in the second half of the XXth century. This concept continues to influence the development of basically all fields of science. Amongst the various ways of creating enantiomerically enriched products, catalytic methods (i.e. when chemical transformations are controlled by a small amount of chiral compounds) are considered as the most appealing. It is difficult to conceive that the impressive knowledge accumulated in this field was gained in a relatively short period of time. New concepts and methods are emerging continuously, allowing more selective, economically more appealing and environmentally friendlier transformations. In this context, asymmetric organocatalysis is a «fast lane» of the chemical highway: the progress in the last decade has been simply spectacular.

Performing chemical transformations with a small amount of organic molecules is not a novel concept: enantioselective organocatalytic transformations were developed prior to organometallic ones. The relatively narrow scope of these transformations, however, did not stir particular interest in the past. Nowadays the situation is changing. The renewed interest is due to the serendipitous discovery of a number of selective transformations and also to the realization of the tremendous potential which is inherent to these novel forms of activations, which are also complementary to the existing ones. After the milestone book of Berekessel and Gröger (Asymmetric Organocatalysis, From Biomimetic Concepts to Applications in Asymmetric Synthesis VCH, Weinheim, 2005), this multiauthor book is the state of the art of this rapidly evolving field. The chapters are written by organic chemists, leaders at the forefront of research and able to provide an insider’s view. I am grateful to all colleagues who agreed to contribute to this project, despite their many other obligations and busy schedules: the result is more than impressive.

It is the aim of this book to provide a concise and comprehensive treatment of this rapidly evolving field, focusing on the preparative aspect of this chemistry. In fact, the use of organocatalytic transformations in a multistep synthesis remains scare. This book wishes to promote the application of these reactions, giving solid synthetic evidence. Additionally, a collection of sample procedures of typical
organocatalytic transformations is given in Appendix I. Despite the spectacular advancement, there is room for further development, and it is the wish of the Editor that this manual should be rapidly updated.

This book is suggested for graduate students as well as all organic chemists.

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Peter I. Dalko