Preface

Fluorine is a fascinating element of extremes, as it can form very reactive but also almost inert compounds, which holds for both, organic and inorganic derivatives. Since the first discovery and isolation of elemental fluorine by Henry Moissan in 1886, the chemistry of fluorine has largely evolved. Several decades ago, fluorine chemistry was still a rather exotic field, which had been worked on by a rather small number of specialists. However, the development of new, significantly milder fluorination techniques formed the basis of a beginning triumphal march, especially of fluoroorganic compounds. Nowadays, the latter play an important role in many fields of applications, such as pharmaceuticals or high-performance materials.

Of course, the increasing importance of fluorinated compounds has also been reflected in the scientific literature. To date, there are numerous excellent reviews and book publications about special topics in fluorine chemistry. However, most of the literature is limited on either inorganic or organic compounds and comprehensively presents synthetic accesses, properties as well as applications of a certain class of fluorine-containing compounds. So far, there has been no general and joint introductory review on the preparation of organic and inorganic compounds. Therefore, this manuscript rather focuses on preparative aspects and does only provide a small background on the properties and applications of fluorinated derivatives. It mainly targets students but also researchers in academia and industry and contains study questions for each chapter, which shall help to underline and repeat the most important aspects.

The present book is divided into three main parts: A, B and C, where Part A gives some general introduction to fluorine chemistry. This part for example covers the very important compounds F_2 and HF, as well as a number of general aspects, which apply for fluorine compounds. Consecutively, inorganic and organic fluorine compounds are discussed in Parts B, and C, respectively. The inorganic part is divided after the groups of the periodic table and presents the most relevant binary fluorine compounds, oxyfluorides, as well as a few other important derivatives for each element. In contrast, the organic part does not focus on special compounds, but describes general fluorination techniques of the most important substrate classes. Due to the steadily increasing amount of synthetic procedures, especially in organofluorine chemistry, it is impossible to prepare a comprehensive review. Thus, the selection of the presented techniques and compounds is certainly not an ultimate composition. Instead, the inclusion or omission of the one or other synthetic method has often been a matter of taste of the author and shall not be understood as any type of qualitative evaluation.

I am very grateful to Gerd-Volker Rösenthaller, who always supported me during the preparation of this book, but also far beyond. In addition, I owe my gratitude to Dieter Lentz for all the help and encouragement over the past years, which made me become a part of the worldwide fluorine community. Moreover, a lecture on or-

ganic and inorganic fluorine chemistry, which was jointly held by Dieter Lentz and Konrad Seppelt at Freie Universität Berlin clearly served as inspiration for this book. Most of all, I want to thank my wife, Laura, for her patience and support during the past 21 months. During this time, I have definitely spent most of my free time with the preparation of this manuscript and not with her, which she understandingly accepted without complaints.

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Bremen, November 2020