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Fluorinating Agents and Their Application in
Organic Synthesis

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TO THE 4TH EDITION

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Preface

Organo-fluorine compounds have become increasingly important in the last 50 years, as synthetic routes to them have been developed; very few occur naturally. Their chemical behavior covers the entire range from inertness to high reactivity and their physical properties show unique features. These characteristics have led to many specialist uses in various fields particularly as inert fluids, polymers (e.g., Teflon), elastomers, surfactants, surface treatment agents, and fire extinguishers. These properties are also very important in biological and medicinal applications (e.g., the pharmaceutical Prozac and the fluoroquinolone antibiotics) and agriculture (e.g., Trifluralin).

Houben-Weyl Vol. E 10 Organo-Fluorine Compounds is a critical survey of the academic and patent literature, organized in a systematic and structured way.

In Volume E 10a, an introduction section details the history of the subject (including the role played by F. Swarts), an outline of nomenclature, physical and physicochemical properties, elemental analysis, structure determination, toxicity, and applications of these extraordinarily interesting compounds. This is followed by Section A which details the diverse range of fluorinating agents used to make C–F bonds, covering everything from hydrogen fluoride to high valence oxidizing metal fluorides. In Volume E 10b described in detail in Section B are methods for the synthesis of fluorinated compounds from organo-fluorine precursors (the building block approach), while in Section C are outlined general reactions and reactivity of organo-fluorides. Those familiar with the Houben-Weyl series will know that in 1962 a volume (5/3) detailing methods for the preparation of organo-fluorine compounds, written in German, was first published and it is still cited as a source of information even today. Houben-Weyl Vol. E 10 Organo-Fluorine Compounds is written in the same tradition by leading experts in the field and will prove to be an invaluable tool for the student and researcher alike well into the next millennium.

Special thanks are due to all the authors who wrote their chapters with dedication and care and who have shown a lot of perseverance with this project. Moreover we are indebted to the editorial staff at Georg Thieme Verlag and all their technical co-workers for their support and help throughout each stage in the production of this volume.

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Introduction

A. Fluorinating Agents

Volume E 10b

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