Volume Editor's Preface

This volume covers aqueous organic reactions. Starting from structure and properties of water (Section 2), reactions of C—C multiple bonds (Section 3), reactions of carbonyl and imino groups (Section 4), and cyclization, rearrangement, substitution, cross coupling, oxidation, and other reactions (Section 5) are described. While the style of *Science of Synthesis* is kept, the contents are not completely comprehensive, but do cover almost all types of organic reactions. This is in contrast to previous monographs and books that describe aqueous organic reactions. The fact is that, after rapid progress in this field during the last decade, a fairly comprehensive overview of aqueous reactions can now be summarized.

The scope of this volume includes reactions in water, in the presence of water (water in small amounts), and in water–organic solvent systems. Most organic materials are oily and do not dissolve in water. On the other hand, they are mostly soluble in water–organic solvent systems. In addition, solubility is not directly and not necessarily related to reactivity and selectivity in chemical reactions. Therefore, any classification based on solubility is rather meaningless when one describes and evaluates aqueous organic reactions. A more important point is the role of water; water can assume important functions in chemical reactions where it is used, and this volume focuses on reactions where water plays a key role. The title of this volume, *Water in Organic Synthesis*, reflects this concept and policy.

Special techniques with water are highlighted in Section 6, where "on water" reactions, supercritical water, and cyclodextrin chemistry are discussed. In this section, some synthetic reactions that are also described in other sections are treated based on their special techniques. Furthermore, in Section 7, industrial applications of aqueous organic reactions are summarized.

Although, for a long time, almost all synthetic reactions have been carried out in organic solvents, the negative aspects of these solvents have come to the fore recently: many are volatile, flammable, and sometimes explosive, and have damaging effects on human health or on the environment. Water is obviously the first choice of alternative solvents: it is clean, nontoxic, inexpensive, and the most environmentally benign.

Water is a really beautiful substance in nature, and indeed she chose water as a "solvent". Many elegant *in vivo* reactions are carried out in water in our bodies, mainly catalyzed by enzymes. Should we not also choose to use water for organic synthesis?

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