Preface

THE FUNDAMENTAL ISSUES IN BIOLOGY ARE SELF-REPLICATION, information processing, and turnover of metabolic products to generate energy for sustenance. All these should happen at normal temperature and pressure, thus imposing a great demand on the system. The accuracy with which the system ought to function is always at a premium. In the majority of cases in biology, the accuracy of any process is dictated by the paradigm of molecular recognition, which relies on two basic tenets: two molecules must recognize each other, and there should be three-dimensional complementarities between their surfaces. On the other hand, the molecules need to be macromolecules in nature, which is possible by polymerizing several monomers of same or different types. Such macromolecules generate various shapes and sizes, which ultimately leads to degeneracy in the recognition pattern.

A cursory look at the polymers made with different units and possessing no biological function would indicate that they are not folded according to any defined rules and thus the shapes are not designed specifically for molecular recognition. There are, however, exceptions that will be discussed at the end of this book.

This book attempts to enlist certain principles of molecular recognition. One would hopefully appreciate the enormous efforts of thousands of researches that have been taking place over the past several decades to bring this important subject to a point of admiration.