Preface

This textbook appears as a result of the experience in more than 20 years of lecturing organic chemistry to students of biology, molecular biology, and ecology within the Faculty of Science and Mathematics of the University of Zagreb. Since the great books of organic chemistry for chemists appear to be too advanced for students whose study is only partially related to chemistry, I have decided to prepare the text that is more oriented to the essence of organic chemistry.

Open problems in writing the basic organic chemistry textbook include the selection of concepts for the representation of the material, but also the level of the explanation of the complex phenomena such as reaction mechanisms or the electron structure. Here I propose the compromises. First compromise is related to the mode of the systematization of the contents, which can traditionally be based either on the classes of compounds, or on the classes of reactions. Here, the main chapter titles contain the reaction types, but the subtitles involve the compound classes. The electronic effects as well as the nature of the chemical bond is described by using the quasi-classical approach starting with the wave nature of the electron, and building the molecular orbitals from the linear combination of the atomic orbitals on the principle of the qualitative MO model. Hybridization is avoided because all the phenomena on this level can be simply explained by non-hybridized molecular orbitals.

The text is divided in two parts. First chapters deal with fundamental aspects of the structural theory, reaction dynamics of organic reactions, electronic structure, and some basic spectroscopy. Last, the largest chapter represents the introduction to the organic chemistry of natural products. Comparison of the reactions in the laboratory with the analogous molecular transformations in living cells will help the students to understand the basic principles of biochemistry. The most interesting property of organic chemical systems, the formation of the high diversity of structures, is pointed out almost in all chapters. This approach is designed to help the students to provide deeper insight into the phenomena of the chemical evolution as a base for the biological evolution.
I intend this book for students of biology, molecular biology, ecology, medicine, agriculture, forestry, and other professions where the knowledge of organic chemistry plays the important role. I also hope that the work could also be of interest to non-professionals, as well as to the high school teachers.

Zagreb, Croatia
Hrvoj Vančik
2014
Basic Organic Chemistry for the Life Sciences
Vančík, H.
2014, XIII, 179 p. 331 illus., 51 illus. in color., Hardcover
ISBN: 978-3-319-07604-1