

**Chirality in Natural and Applied Science**, Edited by W. J. Lough and I. W. Wainer; CRC Press: Boca Raton, Florida, 2002, 336 pp, hardback, \$139.95; ISBN 0-84-932434-3

This book has been written by 16 contributors, all famous specialists in their field. It is divided in 11 chapters plus an introduction. Owing to this structure every chapter can be read almost independently. Conversely, because of overlapping topics some redundancies could not be avoided.

Most of the chapters end with concluding remarks followed by extensive (and thus useful) lists of references.

Chapter 1 details Pasteur's discovery of molecular asymmetry. Microscopic and macroscopic dissymmetry in the universe is examined. Chapter 2 defines 'true' and 'false' chirality. The different possible influences in the emergence of homochirality (and thus life) are reviewed (autocatalysis or enantiomeric antagonism). Chapter 3 goes deeper inside fundamentals. Modern concepts of dissymmetry in physics are presented. The possible connections between the cosmic dissymmetry and homochirality is discussed. Chapter 4 explores the mechanisms behind molecular recognition. The so-called 'three point model' is presented and its validity discussed. While, in Chapter 5 the basis of stereoselectivity of a drug action is presented. A special emphasis is given to structure – function relationships of voltage – gated channels. Then in chapter 6 chirality is presented in the realm of neuroeffector junctions. It is shown that for a large majority of blockers the pharmacological activity resides in a single enantiomer. Chapter 7 is entitled 'Separation of chiral compounds from crystallization to chromatography'. Since two pages are devoted to crystallization methods and eighteen to chromatography one can wonder if the title is really appropriate. In Chapter 8, significant efforts have been made to make the interpretation of Circular Dichroism accessible to most scientists of different cultural origins (e.g. the coupled oscillators model). Chapter 9 deals with chirality in chemical communication especially among insects (by means of pheromones). Chirality is shown to be an additional parameter, which secures great specificity in perception. Chapter 10 is an attempt to give rational between configuration and olfac-

tory properties. Chapter 11 highlights the asymmetry in the exterior forms of living organisms.

As detailed above, this book covers a large area of science: physics, spectroscopy, chemistry, medicinal chemistry, biochemistry, physiology, taxonomy!! Nevertheless, a feeling of frustration exists at the end of a thorough reading. Indeed, numerous important implications of chirality are simply not treated. Without being exhaustive the following aspects are missing:

Mathematics: dimension of space and chirality, topology – e.g. handedness of Moebius strip – the important question of quantification of chirality is not addressed and yet K. Mislow who is an active contributor in this area has written the introduction.

Thermodynamics: (equilibrium thermodynamics: Gibbs–Scott-rule, the proportion of racemate versus conglomerate, the practical aspects of enantiomeric enrichments, out of equilibrium thermodynamics : emergence of chiral dissipative structures).

Crystallography and crystal growth: symmetries allowed in chiral crystal lattices. How chiral organic molecules or proteins are packed in three dimensional periodic space.

Supramolecular chemistry: impact of chirality in molecular recognition of host-guest associations

Organic synthesis !.....

Anatomy, neurology, etc...

These important missing issues show how vast the domain of chirality is; it is then hardly conceivable to treat the subject in a single book. Therefore, the title should have been more restrictive: 'Aspects of chirality in natural and applied science'. Nevertheless, it contains a great deal of informative notions and data which are relevant to asymmetry in the full sense of this term and thus, can be recommended for any open minded researcher and student who aims at enlarging his scientific culture. Moreover, the text is pleasant to read and the illustrations are of good quality, which adds a positive general aspect to this book.

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