

Scent and Chemistry is the long-awaited successor to Günther Ohloff's famous book *Riechstoffe und Geruchssinn—die molekulare Welt der Düfte* (Springer, 1990). The first edition was soon followed by an English version in 1994; both sold out quickly. Their success is easily explained: the invisible and mysterious scents have always fascinated humankind, and Ohloff discussed the details of their structure and sensory activity in a concise form. At the same time, the book was a bonanza for the organic chemist interested in stereoselective syntheses.

Thanks to the initiative of Wilhelm Pickenhagen and Philip Kraft, Ohloff's life-long experience and scientific legacy is now accessible again, and is presented in a splendid form. The authors were well advised not to change the general structure of the text, but what they call an update is actually a thorough revision and considerable extension, resulting in almost doubling the number of pages.

The opening chapter, a short history of perfumery, narrates in vivid words how creative noses, long before the advent of gas chromatography and mass spectrometry, composed fine fragrances which, in many cases, continued to please customers for decades. Chapter 2 deals with the anatomy, physiology, and biochemistry of the human chemical senses. The scientific progress that was achieved through many additions, refinements, and corrections culminated in the award of a Nobel Prize to Linda Buck and Richard Axel in 2004. The chapter describes research to determine the chromosomal location of genes that code for odorant receptors, and mentions the surprising discovery of the presence of the hOR17-4 receptor on sperm cells, originally published in *Angewandte Chemie*. A new section on "Description and Classification of Odor Impressions" has been added. An extensive glossary and over 100 literature references give an indication of the tremendous progress achieved in this field.

The relationship between the chemical structure of odorants and their sensory character, which is the topic of Chapter 3, remained a mystery for many years. Systematic studies on isomers and analogues showed that small changes sometimes resulted in huge sensory differences, while molecules with apparently completely different structures evoked similar odor impressions. For example, "wine lactone", which does not possess any

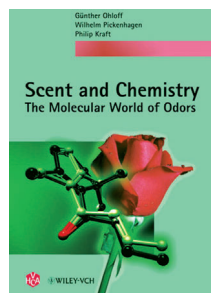
unusual sub-structural features, is the world's most potent odorant, with a threshold of 0.1 pg per liter in air, whereas a stereoisomer of the same compound is less active by eleven orders of magnitude (!). Many cleverly designed, but ultimately fruitless, attempts to arrive at a comprehensive rationale are described in a new section on "Odor Rules". Even today, efforts aimed at the structure-based design of odorants have limited success because of the lack of heterologous receptor models for binding studies and the great diversity of this family of receptors.

The following chapters discuss odorants derived from natural and petrochemical sources, ionones, damascenones, Iso E Super, essential oils, and odorants from animals, and the principles outlined in the preceding chapters are exemplified in more depth. The abundant provision of chemical structures and reaction schemes, which made the first edition so satisfying to read, is retained in this book, but the artwork has been completely revised and re-drawn. Many colored figures and photos and new sections have been added. Preparative organic chemists will discover numerous rarely described applications of familiar chiral reagents and mechanisms. Those more interested in structure–activity relationships will be rewarded with many examples, such as Pomarose, a trimethyloctadienone which nicely overlaps with the olfactophore model of β -damascenone and shows similar fruity-floral odor attributes. But what makes the book really unique is the (often quantitative) description of the odor principles of historical and modern perfumes. From the scented wedding dress of Empress Josephine to the "hot ironed-linen" odor of a modern composition, the authors reveal the carefully protected secrets of a billion-dollar industry. These are summarized in a separate "Perfume Index", which complements the very detailed regular index and contains about 450 entries.

The book lives up to its promise to inform the interested reader about the current state of the art in the multi-disciplinary field of human olfaction, with an emphasis on fragrance chemistry. The first edition of the book was written for "interested scientists and everyone who appreciates nice scents". The same is also true for this book.

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