



### Meaningful Scents around the World



By Roman Kaiser.  
Wiley-VCH, Weinheim 2006.

304 pp., hardcover  
€ 98.00.—ISBN  
978-3-906390-37-6

The world around us is full of intriguing and beautiful scents. In sensory terms, we humans tend to be dominated by vision, and this often leads many of us to a lower appreciation of our odorous environment than it deserves. Not so with Roman Kaiser. He has devoted his working life to tracking down and analyzing interesting scents from all around the globe, from the top of the Swiss Alps to the deepest jungles in Papua New Guinea. His plant-hunting techniques range from simple visits to gardens to using a balloon to reach flowers high up in the canopy of tropical rainforests. His searches for unusual species and his knowledge of botany led to his discovery of a new orchid, named *Coryanthes kaiseriana* after him.

Much of this fascinating book is written in the form of a diary of Kaiser's expeditions. Each chapter is devoted to one topic, which is often an expedition, but there are also chapters on such subjects as comparison of different wines, or analyses of specific plant species such as roses, osmanthus, and agarwood. Each chapter contains a description of the analytical work on that subject, and also provides fascinating glimpses of the author's character. He is a polymath, who sees not just the chemistry of the plants but also their role in nature. It would be impossible to read this book without becoming more

aware of and appreciative of the fascinating, complex, varied, and very beautiful world in which we live. Like most first-rate scientists, Kaiser also has a keen interest in the arts, and the book is liberally sprinkled with appropriate quotations from the prose and poetry of many cultures and historical periods. His analysis and description of the various scents often leads on to fascinating comments on history, fable, and philosophy, thus weaving all of these diverse disciplines into a rich tapestry.

For the analytical chemist, there are excellent descriptions of his methodology: principally, trapping of the headspace of odor sources and analysis of the trapped material by gas chromatography linked to mass spectrometry (GC-MS). For the natural products chemist, he describes the variety of structures that exist, and shows how degradation contributes to the cocktail of odorous components in plants. Examples include ionones from carotenoid pigments, and aliphatic aldehydes from fatty acids. For the biologist, he discusses symbiotic relationships of plants and insects, how some orchids trick specific bee species into pollinating them, how and why plants and fungi mimic each other, and so on. We learn how humans use plants and extracts from them for practical and hedonistic purposes, and how odorous substances have become a part of human culture. The variety of fascinating stories of plant volatiles ranges from snow that smells of watermelons and bleeds when trodden upon, through flower clocks and Japanese mats, to the means by which camels can smell water at a range of 80 km.

The table of contents and index are well laid out and comprehensive, making it easy to find one's way around the book and locate any specific subject matter. There is a 55-page section containing details of analyses of the headspaces of the various plants described in the text. This is clearly presented and illustrates the variety of compositions of essential oils. It gives the natural products chemist a clue into the biosynthetic pathways operating in the different species and, for those experienced in perfume chemistry, it will give an indication of the odor aspects one might expect to find in the oils. I particularly like his representations of gas chroma-

tographs in the individual chapters. The key odorous components are identified by their structures, which is very helpful in interpreting the data. This feature comes to prominence in the fascinating chapter on the analysis of various wines. Even a cursory inspection of the gas chromatograms reproduced in this chapter will show how important trace components of high odor intensity are in determining the overall odor profile of a complex mixture. Here GC-sniffing is an important complement to GC-MS, since it directs the analyst to the points in the chromatogram that are of most significance in odor terms. Examples include rose oxide at a level of 0.02 % in the headspace of a gewürztraminer which gives it a characteristic rose note, or 4-methyl-4-sulfanylpentan-2-one which, although only present at a mere 0.000001 % of the headspace, provides the blackcurrant signature of sauvignon blanc.

Since each chapter is self-contained, the book is easy to dip into. I find that putting it down again is more difficult, because at the end of one chapter I see another fascinating topic appearing in the next. The quality of production is very high, as befits the quality of the text. The layout, printing, and photographs are all excellent, and the quality of the cover and sewn bindings gives it a sense of luxury, thereby making it a volume to be read and handled with respect as well as pleasure. The beautiful photographs and plethora of fascinating information would make the book irresistible to the layman, yet at the same time the technical detail will hold the chemist's attention. I can imagine the book lying on a coffee table to lure nonspecialists into opening it, sampling the richness of the content, and being drawn to an appreciation of the wonders of natural products chemistry. For the specialist, it is an invaluable source of information and inspiration.

Charles Sell  
Quest International  
Ashford (UK)

DOI: 10.1002/anie.200685475