

limitations of the technique, and to do so in such a way as to be useful for a range of readers from technicians to PhD scientists.

The book amply meets these objectives. It is well written and gives the reader a clear insight to the power and potential of molecular fluorescence. Being a pioneer of atomic fluorescence, I am often confronted with objections to this technique but this book clearly defines the role of molecular fluorescence. It would, perhaps, be helpful if the title included a reference to 'molecular'. I shall, however, be referring my audience to this book as an introduction to the techniques.

Molecular fluorescence has many growing applications and this book gives a clear perspective of the current state of the art. It is recommended reading for chemists and biologists working in clinical and environmental areas.

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Molecules at an Exhibition

John Emsley

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This publication targets readers with a wide variety of interests rather than specifically chemists, although all chemistry undergraduates would derive a great deal of pleasure, stimulus and satisfaction from reading it in their first year. The book is divided into eight chapters, called Galleries, and each Gallery contains written 'Portraits' covering topics of scientific interest and importance, in which environmental factors relating to health and pollution feature extensively. The contents are largely based on articles written for newspapers over a number of years.

Dr Emsley invites us to tour each Gallery, where we encounter both familiar and unfamiliar molecules accompanied by a description of their effects on humans and on the environment. Gallery 1 covers an account of simple chemicals that can influence our lives, e.g. addiction to chocolate due to phenylethylamine; the effect of oxalic acid present in rhubarb and of caffeine, which is more than a mere stimulant. The section on selenium, an essential element, describes its role as a component of enzymes that produce hormones in the

thyroid gland, its importance in Chinese medicine and its electrical properties.

The 14 biologically essential metals are considered, including their importance in skeletal tissues. Perhaps there should have been some reference to the effect of gravity on bone density as experienced by astronauts, and of hard or soft water. The biochemistry of iron, nickel and cobalt (as in spiders and lobsters, for example) and molybdenum (as in nitrogenases) is well presented. An amusing story is the part played by a molybdenum enzyme in the primary oxidation of ethanol to ethanal in the human body: Japanese have low levels of this enzyme, and hence the effects of consuming alcoholic drinks are prolonged. An excellent account is given of the function of nitric oxide (NO) in biological systems. Introducing iron sulphate into 60 km² of the Pacific Ocean was reported to have rapidly transformed a barren sea into a green plankton-rich habitat.

Gallery 3a is headed 'Strictly Private' and covers interesting aspects of the illegal drug Ecstasy, originally intended as a treatment for obesity. Almost every section includes humorously presented factual and novel information: for example, drinking five cups of tea a day provides the life-enhancing 15mg of aspirin. It might even come as a surprise to learn that the human body contains more potassium than sodium: the role of both is discussed, with fascinating examples. In the USA death sentences may be performed by injecting a lethal dose of KCl, leaving the body's organs undamaged for possible use in transplant surgery. Bananas generate ethene, which at a concentration of 1 ppm enhances the ripening of other fruits: hence the beneficial effect of having bananas in close proximity to other, unripe, fruits.

Organometallic chemistry features in relation to the use of chiral titanium, zirconium and hafnium metallocenes for the stereospecific polymerization of unsymmetrical alkenes, producing, for example, isotactic polypropene. Perhaps the dramatic change in the toxicity of some organometallic compounds (e.g. methylmercury) relative to inorganic metal compounds should have received more attention, though the dangers of using organotin compounds as antifouling additives in marine paints is mentioned. For chemists an Appendix, listing chemical structures, would have been a useful addition. However for those who want to know why the British paid royalties to the USA for their discovery of penicillin, why you may have zirconium in your armpits or how tree frogs manufacture a super pain killer, read this book!

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