buy me a few drinks in the UCL bar. That being out of the way, here we go.

World Records in Chemistry is a profoundly frivolous idea, which has been turned into a fascinating and highly entertaining book. This 350-page volume will please, amongst others, the Chemistry Nerds out there (I write this review on the 37th anniversary of Giulio Natta's synthesis of polypropylene under low pressure conditions) who just love arcane statistics, those who love delving randomly into the nooks and crannies of chemistry past and present, and those who need material with which to spice up their lectures to undergraduates.

The records claimed in the book range from the quite obvious but always surprising (the longest characterized alkane — C(390)!; the largest synthetic ring — 288 atoms!; the longest bond — 620 Å in the van der Waals molecule He(2); the most toxic molecule — the marine polypeptide, maitotoxin; the sweetest molecule — sucronic acid; etc.), to the quite arcane (the smelliest compound — not surprisingly, a thiol; the highest oxidation state — U(82+), seen by mass spectrometry; the reaction with the most components — seven, not counting the solvent, in Ugi's synthesis of a thiazolidine). On a less serious level, those of us who imagine that the Meerwein–Pondorff–Verley reaction has the longest (and most ridiculous) name will find that the Lobry–de-Bruyn–von-Ekenstein reaction beats it by three letters. But the Buchner–Curtius–Schlotterbeck reaction goes one letter further still. We also discover that a paper in *Phys. Rev*. had 271 co-authors, beating by far Woodward's synthesis of erythromycin, which had a mere 49. The book is by no means limited to academic chemistry. Extensive sections devoted to industrial, environmental and pharmaceutical chemistry put commodity chemicals firmly in their place and rather nicely put into perspective the role of chemistry in the world at large. Each record is neatly discussed and explained, with a series of related examples and detailed references to the literature. Thus, non-specialists will find that they can learn quite a lot along the way. Surprisingly, to my mind, the authors appear to have been too modest to claim any records for themselves.

In addition to the records, the authors have tabulated the Nobel Prizes awarded in chemistry and physics. They have also ingeniously come up with a 'Perpetual Calendar' for chemists, noting key chemical events that occurred on every day in the calendar. One of the highlights for me must be August 10th, the anniversary of the hairdresser Karl Ludwig Nessler's introduction of his process for giving 'permanent waves'. This is a section that they ought to expand. High time, also, that they got to work on a desk calendar for next year. Just think of the sales, especially if some of the pages were 'scratch-and-sniff' …

Purists may quibble here and there with some of the records (is di-helium a 'real' molecule?) and, no doubt, some records may already be out of date — the industrial sections are probably the most vulnerable — while the competitive spirit that obliges academics to out-nerd each other with ever more obscure firsts (the first molecule with 16 chiral centres synthesized on a Tuesday) may spur some profoundly insecure individuals to try to get their name into this remarkable compendium. Who cares? This is a very amusing book from which anyone can learn something. Its rapid-fire style makes it ideal dipping material, readable almost at random and, for the academic chemist, it will raise intriguing questions about the limits that define our work. It also makes you wonder what sorts of minds managed to come up with so many crazy categories.

In summary then, I exhort you to buy a copy for yourself. Buy it for a friend for their birthday and buy another couple of copies as Christmas presents. You won't be disappointed. (And now, Rudy, I think you owe me a beer!)

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Large (C ≥24) polycyclic aromatic hydrocarbons: chemistry and analysis (Chemical analysis monograph series, vol. 158)

John C. Fetzer
Wiley–Interscience, New York, 2000
xvi + 288 pages. £90
ISBN 0-471-36354-5

The publishers should withdraw this book for revision and reprinting. There are more structures in the text with pentavalent carbon atoms than there are without them, and the text has clearly not been properly proofread or edited. This might be considered a pedantic point, except that the subject of the text is polycyclic aromatic compounds and the properties of these substances can be most readily inferred by examining the number and position of the double bonds. This can be illustrated by application of the Robinson–Clar sextet theory, in which one finds the number of aromatic sextets in a Kekulé structure, the stability of the compound being assumed to increase with the number of complete sextets. Thus phenanthrene, with two complete sextets, is expected to be more stable than anthracene, with one. Further, one can predict that the central rings of both compounds will be the most reactive, in phenanthrene because it is not part of an aromatic sextet and in anthracene because reaction at the 9,10 positions gives two sextets. To carry out this analysis for the structures in the text one has to redraw them. The problem with the structures appears to have arisen when the figures were made for the body of the text, since those on the spectra are generally correct.

The book begins with an introductory chapter on the general nature of the polycyclic hydrocarbons and the definition of 'large'. The nomenclature of the systems is discussed, presumably for those who are not familiar with these compounds, and this could be made much easier to follow if the relevant letters were given to the faces of the relevant rings, for example to compare the name benzo*ghi*perylene with the structure. The author also adopts an unusual style in not attaching the compound number to the structure named in the text but calling them *compound x*; this is of no consequence when each structure is addressed, but it becomes difficult for the reader when one is given lists (e.g. see page 46). The second chapter discusses the large polycyclic hydrocarbons (LPAHs), with sections on their properties, synthesis and theoretical studies. The theoretical section again suffers greatly from incorrect structures (e.g. **100**, **101**, **102**). The first sentence of section 2.2, 'Many PAH properties extend continuously upward with increasing molecular weight', may possibly be made to make sense, but this is followed by the discussion of two properties that diminish with increasing molecular mass. Chapter 3 discusses the electronic spectra, including solvent effects, and examples of spectra are reproduced. Fluorescence spectroscopy is discussed in Chapter 4, including narrow line-width spectral techniques and time-resolved methods. Infrared methods are discussed briefly in Chapter 5, and mass spectroscopy in more detail in Chapter 6. The interesting topic of the spectra of LPAHs in outer space is discussed in Chapter 7, with the observed bands correlated to the spectra of specific hydrocarbons. Chromatographic fractionation of the LPAHs by GLC, TLC and HPLC techniques is discussed in Chapter 8. Chapter 9 indicates where LPAHs may occur naturally and the difficulties of analysing for them because of the dearth of standard compounds. Chapter 10 examines methods for structural elucidation, including X-ray crystallography and NMR; there is a brief chapter on sample preparation, and the final chapter compares structural methods and the information they provide. There is an appendix of fluorescence spectra and a brief index.

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Chemical process technology

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xii + 453 pages. £27.50
ISBN 0-471-63062-4 (paperback)

Good books on industrial chemistry are almost as thin on the ground nowadays as industrial research laboratories. This book emanates from Holland, which is noted for having good relations between academic and industrial laboratories. Professor Moulijn has been at the forefront of research on industrial catalysis for many years.

This is a teaching text rather than a reference book. A small number of generic processes are treated in sufficient detail for the reader to appreciate the principles involved in their design. Petroleum refining and the heavy organic chemicals industry are the main foci, but there are also chapters on some bulk inorganic chemicals, catalysts, fine chemicals, and biotechnology.

Readers of *Applied Organometallic Chemistry* may turn first to the chapter on homogeneous catalysis. The examples here include Wacker oxidation, hydroformylation, and the production of acetic and terephthalic acids. The catalytic cycles involved in these processes are explained in sufficient detail for the average chemist to understand, but the underlying subtle reasons governing the choice of catalytic metal and ligand are, understandably, omitted.

Chemicals are given their common names, appropriate for an industrial text, except for ethene and propene. This inconsistency generates the clumsy names 'polyethene', 'poly-ethene terephthalate' and 'polypropene', which I have never seen elsewhere. Each chapter has a generous number of references, and there is a good index. The book is well written and attractively produced and should be required reading for all students of chemical engineering. Chemists should read it too.

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