

letters

Dense, Denser, Densest

To The Editor:

The article on "Physical and Chemical Properties and Bonding of Metallic Elements" which appears as Textbook Errors 137 [J. CHEM. EDUC. 56, 712 (1979)] was a useful summary of the modern viewpoints on metals. However, I call attention to possibly another textbook error that is propagated therein. For years textbooks have listed osmium as the densest element. Yet, some years ago the National Bureau of Standards' Circular 539 Volume 4, "Standard X-Ray Diffraction Powder Patterns" by H. E. Swanson, R. K. Fuyat and G. M. Ugrin reported ideal densities (from lattice constants data) for the two densest elements as follows: osmium 22.583 g/ml, iridium 22.661 g/ml, both at 26°C. Thus the long-standing champ, osmium, loses out albeit not by much, to iridium.

Lawrence E. Conroy

University of Minnesota
Minneapolis, MN 55455

Historical Studies: The Language of Chemistry

To The Editor:

May I add my own favorite quotation about the therapeutic use of arsenic to those in Sarquis's interesting article [J. CHEM. EDUC., 56, 815 (1979)]? It comes from Crosland's book, "Historical Studies in the Language of Chemistry" [London, Heinemann, 1962, p. 58]

If often happened that mistakes were made in the translation of the names of substances but there is one case in particular where the result of this may well have proved fatal, as well as bringing chemical medicine into disrepute. A Byzantine Greek called Nicolaus Myrepsus compiled a compendium of remedies in which he drew on Arabic sources, although his knowledge of Arabic was poor. He made the mistake of including arsenic as a remedy in certain cases. This was due to his translation of the Arabic *dârsini* (=cinnamon) which the Arabs obtained from the island of Sina of Ceylon. The idea that arsenic had special medicinal properties as a mild remedy for internal use persisted up to the seventeenth century.

Reference (8) in Sarquis's article seems to have accumulated a number of errors. The correct reference is:

Frost, D. V., "Arsenicals in biology—retrospect and prospect," *Federation Proc.*, 26, 194 (1967).

Karl F. Heumann

Federation of American Societies
for Experimental Biology
9650 Rockville Pike
Bethesda, MD 20014

Facile Assignment of R,S Designations to Fischer Projections

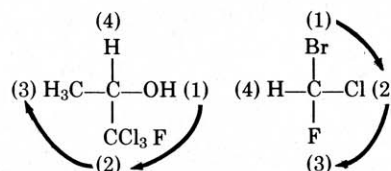
To the Editor:

The article by Dietzel [J. CHEM. EDUC., 56, 451 (1979)] prompts me to suggest a method which I find even simpler and more straightforward.

One can assign the configuration of a Fischer projection without models, calculations, or interchanging groups by applying the following rule.

The sequence of the groups first through third in priority gives the correct assignment when the fourth (lowest) priority group is at the top or bottom of the formula; it gives the *wrong* assignment when the lowest priority group is on the right or left.

Thus, in Figure 1 the lowest priority (H) is at the top and the order 1 → 2 → 3 gives the correct assignment, *R*. In Figure 2 the lowest priority is on the left. Therefore, the order 1 → 2 → 3 (i.e., "*R*") is *wrong*; the correct assignment is *S*.



Howard C. Price

Marshall University
Huntington, WV 25701

Confusion Over D and L Nomenclature

To the Editor:

The traditional usage of the prefix D or L for amino acids still dominates the current literature and everyday laboratory conversation. We often encounter the following type of confusion: "Do you have some of the (*L*)-alanine-¹⁵N you made last week?" "Yes, I have 3 grams of (*D,L*)-alanine-¹⁵N on my shelf," especially if the conversation takes place in front of a noisy hood. The use of (*R,S*) convention will definitely eliminate this problem.

We would like to point out that there is an easy way of correlating the (*D,L*) convention to (*R,S*) in designating the absolute configurations of amino acids, with one exception. The relationship is *D* = *R* and *L* = *S*. To memorize that, one should recognize that the top half of the letter *R* is *D* and both letters *L* and *S* have one continuous stroke in writing. The single exception is cysteine which possesses a sulfur atom of high priority and reverses the relationship: (*L*)-cysteine = (*R*)-cysteine.

Along the same line, another interesting observation concerns the *E* and *Z* prefixes. It probably has occurred to other Chinese or Japanese chemists. In Chinese, 上 designates up and 下 is down. Accordingly, *E* has all three bars on the same side and should designate substituents on the *same* side while *Z* should mean substituents on the *opposite* sides. This is the exact reversal of the official definition. But then, what do Germans know about Chinese?

Sun-Shine Yuan

KOR Isotopes
56 Rogers Street
Cambridge, MA 02142

More Mnemonics

Dear Editor:

Dr. Wolbarst's note on DNAmionic [J. CHEM. EDUC. 56, 733 (1979)] led me to inform you of another similar device used by me in a photochemistry course.

In photochemistry, we often deal with 'charge-transfer' and *n,π** states which are affected differently by a change in solvent. For example in the case of photoreduction of 4-amino-benzophenone the charge-transfer state is obtained in polar solvents while the *n,π** state results in nonpolar solvents. To avoid confusion and their mixing up in the mind, a simple mnemonic is suggested here.

*n,π** and nonpolar words both begin with the same pair of letters and thus can be remembered easily while in "Charge-transfer; Polar solvent" case, their first letters yield CTPS or: CUT-PIECE which is relatively easy to recall. Some people may prefer to remember by using CITYBUS (Citybus) rather the word Cutpiece.

Of course, the importance of other mnemonics, e.g., DNAmionic and that used in the calculation of Huckel energy levels for monocyclic polyenes, can not be underestimated.

Ashok K. Goyal

McMaster University
Hamilton, Ontario L8S 4M1, Canada