Book Reviews

Analytical Applications of Immobilized Enzyme Reactors

by S. Lam, G. Malikin

Blackie Academic & Professional, London, UK.
1994; 276 pp. ISBN 0-7514-0026-2.

The widespread use of immobilised enzymes in analytical chemistry is a relatively new phenomenon and this book is claimed to be the first one devoted to the subject. This is a multi-author work which in 10 chapters aims to provide a description of the theoretical and practical considerations of the design of immobilized enzyme reactors (IMERs). The use of enzymes is particularly attractive in analytical work because of the possibility of exploiting the exquisite specificity of these biological catalysts. This specificity can be either to a particular analyte, or for those enzymes of somewhat broader specificity, a particular class of compounds. It is therefore not surprising that analysts should be keen to exploit enzymes, the surprise is that these proteins are tough enough to cope with the abuse (in terms of the chemistry used for immobilisation and the chromatographic mobile phase used afterward!) that we hurl at them in the process. Apart from showing how to immobilise the enzyme, this book describes a whole range of applications with IMERs used in selective electrodes, in simple flow injection analysis systems, or in-line for chromatographic analysis. A wide spectrum of analytes are discussed including sugars (mono-, di-, oligo-, and polysaccharides) amino acids, uremic toxins, hydroxysteroids, bile acids, glucuronide and sulphate drug conjugates, nicotinamide coenzymes, ethanol in blood and that old favourite "miscellaneous applications" (this turns out to be aldehydes and zinc on close inspection).

As a chromatographer I was primarily interested in the use of enzymes as "post column reactors" and there are many examples of the use of IMERs in this way in this book, often with impressive results. The technique is also just beginning to be applied to CZE.

Overall I was left with the impression that the IMER is now a mature analytical tool and not for enthusiasts only. Perhaps we can now look forward to a time, in the not too distant future when manufacturers will make such systems available commercially.

Most of the chapters are well written and accessible to the non-specialist. In general this is a well produced book, with a good number of illustration and references and a clear typeface. There are some minor irritations such as Table 3.3 which is split over more than one page where there is no need. Also there has been no obvious attempt by the publisher to ensure consistent figure labelling or presentation, with some figures very well produced and others distinctly tacky. The references seem to be fairly comprehensive up to 1991–2 and most are "useful" in that they contain only a smattering of "junk" references to unpublished work and personel communications (such items belong in the text not the reference list).

A useful reference book if you already use IMER technology, and equally useful if you are not a user but want to know more and get up to speed in this area.

I. D. Wilson

Erratum

Limits of Resolution and Speed of Analysis in Linear Chromatography with and without Focusing

by L. M. Blumberg

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Figure 1 on page 721 was distorted. Please find below the correct version of this figure.

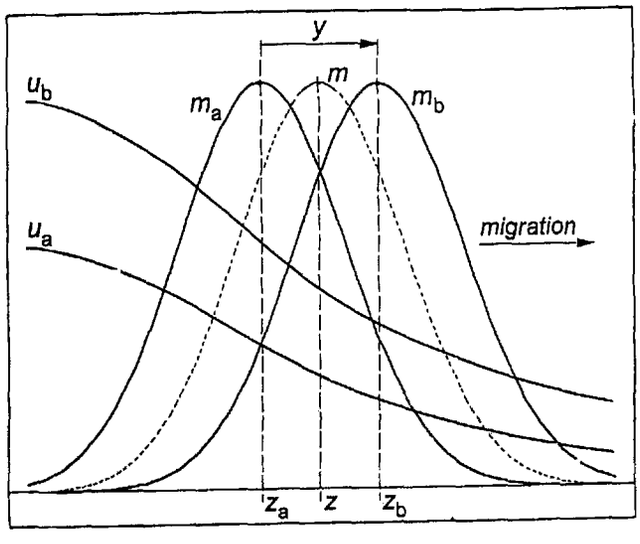

Figure 1

Solute zones 'a' and 'b' with specific masses m_a und m_b, centered at z_a and z_b. Also shown are solute velocities, u_a and u_b, distance, y, between the zones, their combined center of mass, z, and a (non-existing) zone (dashed line) with specific mass $m = (m_a + m_b)/2$ centered at z.