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A review of: "Bioseparations (Downstream Processing for Biotechnology) P. A. Belter, E.L. Cussler and W.S. Hu Wiley Interscience, New York, 1988; hardbound, 368 pages, $39.95"

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BOOK REVIEW

BIOSEPARATIONS
(Downstream Processing for Biotechnology)

P.A. Belter, E.L. Cussler and W.S. Hu
Wiley Interscience, New York, 1988;
hardbound, 368 pages, $39.95

The summary on the inner cover of the dust-jacket begins: "Written specifically for scientists with no background in engineering, and for engineers with no background in biology, Bioseparations is a short introduction to the separation and purification of biochemicals, a technique that forms a juncture between two distinctly parallel disciplines - engineering and the life sciences. The coverage of these engineering techniques is broad enough to be accessible to virtually anyone with scientific training". This is somewhat over-optimistic; I am not at all comfortable with this treatment of the subject. The work is especially weak on the crucial subject of chromatography (here for some reason called "Elution Chromatography"). It particularly understresses the (widely differing) mechanisms underlying each mode of liquid chromatography. Where these mechanisms are (briefly) mentioned, they are as often as not erroneous or misleading (e.g., van der Waals forces are rarely of great import in adsorption chromatography, gel filtration does not work by differences in adsorption, but by differences in pore exclusion or inclusion of solutes of different sites, depending on the pore-size of the gel-beads; affinity methods usually work through antigen-antibody type specific interactions, which are not chemical reactions in the usual sense of that term). Ultrafiltration and electrophoresis

are lumped together in one chapter, even though these two separation methods have as little in common as any other two disparate separation methods. The principle of electrophoresis is treated in four pages. In the ultrafiltration part of the same chapter, the crucial principle of membrane anisotropy is not mentioned, and the problems raised by surface polarization of ultrafiltration membranes are barely hinted at.

This book cannot remotely replace the excellent INTRODUCTION TO SEPARATION SCIENCE by B.L. Karger, L.R. Snyder and C. Horvath, Wiley-Interscience, New York, 1973, notwithstanding the latter work's vintage. In addition to this INTRODUCTION, the scientist and the graduate student especially involved in bioseparations, will do well also to consult the thorough and admirable SEPARATION METHODS IN BIOCHEMISTRY, by C.J.O.R. Morris and P. Morris, Wiley-Interscience, New York, 1976.

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