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## Separation & Purification Reviews

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### Book Review

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ULTRAFILTRATION MEMBRANES  
AND APPLICATIONS

Anthony R. Cooper, Ed.

Plenum Press, New York, 1980; hardbound,  
707 pages, \$75.00

POLYMERIC SEPARATION MEDIA

Anthony R. Cooper, Ed.

Plenum Press, New York, 1982; hardbound  
276 pages, \$39.50

Ultrafiltration Membranes and Applications is a record of a symposium of that name held during the 178th American Chemical Society meeting, in September 1979 in Washington, D.C., and Polymeric Separation Media comprises presentations held at the 2nd Chemical Congress of the North American Continent, in August 1980 at Las Vegas.

Ultrafiltration Membranes consists of six parts: I Fundamentals, II Ultrafiltration Membrane Formation, III and IV Industrial Applications, V Biomedical Applications and VI Ultrafiltration Applications in Environmental Problems.

Polymeric Separation Media is divided into four parts: I Transport in Polymeric Media, II Functionalized Polymers as Separation Media, III Polymeric Membranes as Separation Media, and IV Novel Polymeric Separation Media: Structure and Properties.

All of the first volume and almost half of the second volume deal with membranes and/or membrane separations. As such both volumes together form an uncommonly useful compendium that goes far to bring one abreast of most of the recent major and variegated

developments in the field of ultrafiltration. In addition, Polymeric Separation Media treats a number of aspects of gel permeation, affinity and hydrophobic chromatography. Some of the outstanding papers in Polymeric Separation Media are: "Hydrophobic and other non-ionic parameters in protein separation and adsorptive immobilization by substituted agaroses" (which is one of the last papers written by the late Barend H. J. Hofstee, to whose memory this volume was dedicated) and "Use of synthetic chemical ligands for affinity chromatography of proteins", by Scott P. Fulton and Eleanor R. Carlson. In Ultrafiltration Membranes, of particular note are: "Morphology of skinned membranes: a rationale from phase separation phenomena" by C. A. Smolders, and three papers with very different anti-surface polarization approaches: "Protein ultrafiltration: theory of membrane fouling and its treatment with immobilized proteases" by John A. Howell and Ö. Velicangil, "Boundary layer removal in ultrafiltration" by Mahendra R. Doshi, and "Electrophoretic techniques for controlling concentration polarization in ultrafiltration" by John M. Radovich and Robert E. Sparks. By the first approach a boundary layer of casein is continuously digested away by proteases immobilized in the membrane. With the second approach the boundary layer is effectively removed (at least at low Reynolds numbers) by continuous mechanical skimming, and in the third one fouling by paint or proteins was alleviated by electrophoretic removal. A totally different but equally fascinating and useful contribution is "Ultrafiltration in patients with end-stage renal disease" by Juan P. Bosch et al., which demonstrates the advantage of ultrafiltration over dialysis in artificial kidneys.

Both works are photographically reproduced from a (uniform) typewritten master copy (which unfortunately contains an appreciable number of annoying typing errors). A number of the figures in Polymeric Separation Media display the barbaric and erroneous "UG" instead of  $\mu\text{g}$ .

Both works are provided with a subject index. The two of them are highly recommended to chemical and biochemical engineers

involved in separation and purification methods and especially to those working with membranes. Both volumes are indispensable for all Industrial, Engineering, and University Libraries.

Carel J. van Oss