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A Review of: "SURFACTANT-BASED SEPARATION PROCESSES J.F. Scamehorn J.H. Harwell, Eds. Marcel Dekker, Inc., 1988; hardbound, 342 pages, $115.00"

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BOOK REVIEW

SURFACTANT-BASED SEPARATION PROCESSES

J.F. Scamehorn and J.H. Harwell, Eds.

Marcel Dekker, Inc., 1988; hardbound, 342 pages, $115.00

The 12 chapters, comprising this work, are subdivided into five parts:

Part I: Separations Using Membranes; 1. Use of Micellar-Enhanced Ultrafiltration to Remove Dissolved Organics from Aqueous Streams, by S.D. Christian, J.F. Scamehorn; 2. Use of Micellar-Enhanced Ultrafiltration to Remove Multivalent Metal Ions from Aqueous Streams, by J.F. Scamehorn, S.D. Christina, R.T. Ellington; Part II: Separations Based on Extraction; 3. Reversed Micellar Extraction of Proteins, by T. Alan Hatton; 4. Novel Separations Using Aphrons, by F. Sebba; 5. Microemulsion-Based Separations, by S.E. Friberg, P. Neogi; 6. Liquid-Coacervate Extraction, by N.D. Gullickson, J.F. Scamehorn, J.H. Harwell; Part III: Separations Based on Adsorption; 7. Adsorbed Surfactant Bilayers as Two-Dimensional Solvents: Admicellar-Enhanced Chromatography, by J.H. Harwell, E.A. O'Rear; 8. Adsorbed Surfactant Bilayers as Two-Dimensional Solvents: Surface Modification by Thin-Film Formation, by J. Wu, C. Lee, E.A. O'Rear, J.H. Harwell; 9. Surfactant-Enhanced Carbon Regeneration, by D. Lowry Blakeburn, J.F. Scamehorn; Part IV: Separations Based on Foams; 10. Adsorptive Bubble Separation Processes, by T.E. Carleson; 11. Mineral Separation by Froth Flotation, by D.W. Fuerstenau, R. Herrera-Urbina; Part V: Separations Based on Precipitation; 12. Recovery of Surfactant from Surfactant-Based Separations Using a Precipitation Process, by L.L. Brant, K.L. Stellner, J.F. Scamehorn.

The first three parts mainly treat relatively novel surfactant-based separation methods; part IV treats (very well) the more classical surfactant-based separation processes. The one chapter which

comprises the last part gives a useful solution to the problem of recovering (anionic) surfactant, used in other separation processes, by precipitation with plurivalent cations. The anionic surfactant in question is sodium dodecyl sulfate (SDS). This is the surfactant used very generally in the one separation method not alluded to in this work. This is SDS polyacrylamide gel electrophoresis of proteins (SDS-PAGE), which is the most used method for the separation of proteins according to their molecular size in biochemical and molecular biology procedures. SDS readily binds to practically all proteins and lends them a high negative surface charge, which is equal for all proteins having adsorbed SDS. Electrophoresis in relatively dense gels then separates the proteins solely according to their size, i.e., according to the ease with which they can penetrate into a dense gel when transported electrophoretically. The technique described in Chapter 12 may well begin to solve the hitherto rather intractable problem of preparative recovery of proteins, once they are separated by SDS-PAGE.

This work is strongly recommended to all chemists, chemical engineers, biochemists and molecular biologists, involved in separation and fractionation processes.

Carel J. van Oss