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BOOK REVIEW

AQUEOUS TWO-PHASE PARTITIONING

B.Y. Zaslavsky

Marcel Dekker, New York, 1994; hardbound,
pp. xiii+696, \$165.00

This monograph comprises ten chapters, arranged into three parts: Part I: 1. Water in the presence of additives; 2. Aqueous polymer solutions; 3. Phase separation in aqueous polymer systems: Experimental facts and theoretical models; Part II: 4. Physicochemical properties of phases in aqueous polymer systems; 5. General trends in solute partition behavior; Part III: 6. Hydrophobicity of biological solutes: How to measure it and its applications; 7. Measurements of the relative hydrophobicity of biological solutes by the aqueous two-phase partition technique; 8. Analysis of individual biopolymers and their mixtures; 9. Separation of biomolecules; 10. Phase diagrams.

This work provides a significant advance in our understanding of the underlying physical-chemical mechanisms of aqueous two-phase partitioning as a separation method. Each chapter has a list of references, which in total number more than 1,000. Part I treats the fundamentals leading to the mechanism of aqueous phase separation between two polymer solutions. Part II deals with the mechanisms by which different solutes prefer one phase, or the other. Part III continues the main topic of Part II in chapters 6 and 7, which both treat the influence of the hydrophobicity of the solute on their phase preference, with chapter 6 concentrating on independent determination approaches of solute hydrophobicity, while chapter 7 treats the measurement of solute hydrophobicity by means of aqueous partitioning. Chapter 8 addresses aqueous partitioning as an analytical method for the characterization of biopolymers; while chapter 9 treats methodologies of separation of biomolecules by aqueous partition. Finally, chapter 10 is a vast (164 pages) and unique compendium of aqueous two-phase diagrams. The volume ends with a subject index.

It should be kept in mind that the various modes of aqueous two-phase partitioning are more susceptible to significant scaling-up than most other separation methods (e.g., chromatography, electrophoresis, etc.).

This work is the most extensive, most up-to-date and theoretically the most insightful monograph since Per-Åke Albertsson pioneering work on aqueous two-phase partitioning¹. It is highly recommended to all biochemists, molecular biologists, separation scientists, etc., who are involved in analytical and/or preparative scale separation and characterization of biomolecules and biopolymers.

Carel J. van Oss

References:

1. P.-Å. Albertsson, Partition of Cell Particles and Macromolecules, Wiley-Interscience, New York, 1971; 1986.