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Book Review

JIM W. GOODWIN

Colloids and interfaces with surfactants and polymers—an introduction

Wiley-VCH, 2004,
296 pp;
ISBN: 0-470-84142-7 (hardcover); US $155.00
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While colloids turn up in all sorts of familiar places and guises, from nanoscience to nature, they are often ignored in many undergraduate courses. Part of the problem is the lack of a suitable textbook. Many of the books currently available are either too mathematical or lack clarity. Jim Goodwin, a well-known researcher in colloid science and for many years a university teacher, has written a clear and relatively short introduction to this technologically important field, which emphasizes the physical principles without mathematical overload.

The book is divided into nine chapters. Two introductory chapters introduce the key ideas behind colloid, polymer and surfactant science. One of the nice features of these early chapters, and indeed much of the whole book, is the author's strong emphasis on the practical applications of colloid science. The text is illustrated with a multitude of examples including a fascinating discussion on the science behind such apparently mundane products as decorative paints and household cleaners. Chapters 3, 4 and 5 cover the key and, for students, often the most difficult concepts of the forces between particles and the nature of colloid stability. These chapters do contain equations, although many are simply quoted from more advanced texts. However, given this, the author courageously does not avoid 'difficult' concepts—I particularly liked his discussion of van der Waals forces and retardation, topics frequently dropped from more elementary texts. Finally at the end of this necessarily complex section there is a practical and easy-to-follow guide to estimating the interaction potential in real-life systems, which to my mind is worth the cost of the book alone. The last three chapters give an introduction to more advanced topics including scattering techniques, rheology and the properties of concentrated dispersions.

Overall, the book is well written and features a large number of attractive, well-made graphs and illustrations. The book is addressed mostly at final year undergraduate and first year graduate chemistry students, but students of material science, chemical engineering and physics will also find the book has value. Perhaps inevitably in an introductory text there are omissions—I would have liked to see more on dynamics. There are also a few minor typographical errors (a consistent misspelling of Israelachvili) and some of the explanations (of the depletion effect, for instance) seemed unnecessarily complex, but on balance I would definitely recommend this book to my students and to everyone who is interested in the fascinating science of colloids.

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