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BOOK REVIEW

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Review of Molecular Forces and Self Assembly in Colloid, Nano Sciences and Biology

Molecular Forces and Self Assembly in Colloid, Nano Sciences and Biology. By Barry W. Ninham (Australian National University) and Pierandrea Lo Nostro (University of Florence). Cambridge University Press: Cambridge. 2010. xvi + 366 pp. $78.00. ISBN 978-0-521-89600-9.

This is a well-written book by established and internationally recognized experts in the field. The book incorporates current, classical, and historical references and theories. It is not overly mathematically intensive, yet provides a rigorous presentation while offering a nice visual balance between helpful illustrations, as well as graphs and tables of data. The illustrative images would have benefited if presented in color rather than in black, white, and grayscale. The authors fulfill their objectives of questioning assumptions and presenting new perspectives by offering a fresh way of thinking and new ideas that can be supported. The references include highly cited classical references that are balanced with more recent ones.

Two main parts, in accordance with the book title, make up this 366-page book: Part I, Molecular Forces and Part II, Self Assembly. Part I is composed of eight chapters and Part II of five, with each part containing several subsections. In the first part, over 200 pages are dedicated to the rationale for new authors' approaches to molecular forces, followed by a discussion of various theories and forces. There is a nice flow existing between the two main parts, the chapters, and their respective subsections. The transition between the initial presentation of historical perspectives and classical theories followed by new thought-provoking perspectives is also well done. The discussion of hydrophobic interactions, the nature of water, and the key need for understanding the structure of water is presented in Part I. The authors return to this important topic toward the end of Part II, cleverly tying together both parts of the book. In my opinion, a useful enhancement to the book would have been the inclusion of a chapter on the application of such new perspectives to the development of nanotechnology-, nanomedicine-, and colloidal-based delivery systems, i.e., whether such applications are possible, and if so, how they could be accomplished.

In conclusion, this monograph is a good read and useful addition to one's collection of textbooks on the subject of molecular forces and self-assembly, particularly for researchers actively involved in the field of surface chemistry and colloid sciences. It provides interesting and thoughtful perspectives on fundamental aspects in colloidal science in a clear manner.

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