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A review of: "Conjugated Polymer Surfaces and Interfaces" by W. R. Salaneck, S. Stafström and J.-L. Brédas, Cambridge University Press, 1996; ISBN 0 521 47206 7; xi + 157 pages; \$49.95.

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Book Review

“Conjugated Polymer Surfaces and Interfaces” by W. R. Salaneck, S. Stafström and J.-L. Brédas, Cambridge University Press, 1996; ISBN 0 521 47206 7; xi + 157 pages; \$49.95.

The authors of this book have committed well in excess of 10 years to the combined experimental and theoretical study of conjugated polymers, especially the observation of surfaces via valence level photoemission spectra and the theoretical interpretation of these spectra. Their important and timely contributions are well-known to the international scientific community. The present book places a heavy emphasis on the use of conjugated polymers, especially poly (*paraphenylenevinylene*) (PPV) and its derivatives, in light-emitting diodes. The authors correctly note that the surface science of organic materials and polymers is significantly less well developed than that of inorganic surfaces and interfaces. Graduate students and researchers who are physicists, chemists, engineers, and materials scientists are the intended audience for the book.

The book consists of eight chapters, each with a list of references at the end, and a three page subject index. The chapters are titled Introduction; Theory; Experimental methods; Materials; Device motivation for interface studies; Optical absorption and emission in conjugated oligomers and polymers; Examples; The nature of organic and molecular solid surfaces and interfaces with metals.

The authors do not state what background the intended audience should have before reading and studying this book. It appears more directed to physics/materials science audiences than to a chemical audience. Nevertheless, the book is quite readable, and most readers will find considerable useful information in the approach taken. As noted in the Preface, the book is primarily a summary of the authors' combined experimental and theoretical studies of the electronic and chemical structure of conjugated polymer surfaces and interfaces. On this count it is indeed a very good summary. Nevertheless, the book might have been more useful if its subject areas had been broadened somewhat. For example, the authors largely focus on LED devices that consist

of a polymer layer between two metals. They have ignored the initial 1995 report of another approach to electroluminescence in conjugated polymers, namely light-emitting electrochemical cells. Presumably, this report appeared while the book was being written. An attempt should have been made to include this novel approach. While the authors note that imaging using atomic force microscopy (AFM) might prove to be useful, they fail to cite several AFM studies of nanometer scale images of conjugated polymers. The chemical readership familiar with organoaluminum compounds will not be at ease with the authors' description of the interaction of aluminum with α -terthiophene in Chapter 7.

While the index is generally useful, terms that might have been expected to be listed there, such as "conjugation length" and "oligomer" (found in a chapter title) are not. For "band structure", one must look under "frontier band structure".

The book is relatively free of spelling mistakes and related errors. In Chapter 7, the authors use both "aluminum" and "aluminium" for the element with atomic number 13. The structural formula for PDA-4-BCMU in Figure 7.31 is incorrect.

With the reservations noted above, the intended readership will find this book a useful contribution to the literature of conjugated polymers.

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