

"suite of coals" picked as representative. Yet, discussion of these coals is entirely segregated to less than three pages of a 40-page-long chapter.

The chapter on coal structure characterization provides an excellent accounting of the analytical tools used to study coals and the results of recent work in this field. Happily, this chapter is structured around the characterization of the selected suite of representative coals. Problems of context do persist. A discussion of "char evolution" is initiated without an introduction to the nature of char or any indication of the value of characterizing the "evolution" of this coal derivative. An explanation for the study of char evolution can be inferred only from discussion of coal utilization in later chapters. Moreover, only by reading figure captions carefully and jumping around in the text, does the reader gain some understanding of the means by which "evolution" was studied. Also, some of the figures and tables are not entirely satisfactory.

The discussions of the chemistry of devolatilization and the concomitant transformations of structure are thorough and well focused. A high point in this chapter is an excellent review of the wide variety of efforts to model the process of devolatilization during heating, and to link the nature of the coal devolatilization to the coal rank and type. The reader really understands the need to follow the dynamics of coal/char transformation in high-temperature environments. Once again, however, the link between this discussion and the selected suite of coals is tenuous.

The final chapter is on the conversion of chars, and is a little disappointing. The authors fail to make the critical link between coal characteristics and the value of different coals for combustion, gasification or any other application. The reader is left with the feeling that factors other than structure are rate-determining in real applications. Specifically it appears that residual mineral content (e.g., calcium) can have a very important catalytic impact, particle size can have an important impact

in situations in which diffusion is rate-controlling, and even the type of burner and residence time in a high-temperature precombustion environment can all be factors more significant than structure. Perhaps, this is a correct understanding. The authors could have done more to help the reader with this vexing issue.

To sum up, this book is an excellent source of information on coal/char static and dynamic structures. It also provides a fascinating insight into modern methods for studying coal structure and for modeling its transformations. As an annotated database of the modern literature on many aspects of coal science, it is superb. However, one is a little disappointed at the end to discover no clear and simple link is made between the structure and uses of coal.

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Plastics for Electronics: Materials, Properties and Design Applications

By William M. Alvino, McGraw-Hill, New York, 1995, 363 pp., \$50.00.

This book is organized in four parts: fundamentals of plastics for electronics, design considerations for plastics, utilization of plastics in electronics, and reference sources on plastic materials. The first part constitutes the major portion of the book and reviews the usage of plastics in the electrical industry, basic polymer concepts, major thermoplastics and thermosets, elastomers, alloys and blends, polymer processing, high-performance polymers, and organic coatings. This diverse range of topics imparts almost a handbook-like feel to the book. A significant amount of information is covered, making this

part a handy reference. A large number of industrially important plastics are discussed, with their performance characteristics summarized. The reader will therefore save a great deal of time and energy which would otherwise be needed for collecting and analyzing a large body of literature.

The second part discusses two general topics: engineering properties (and testing of such properties) and design considerations. Here, the properties under consideration include mechanical, electrical, thermal and environmental (e.g., chemical resistance) behavior. Concise definitions and testing methodologies are presented. Selected plastics and elastomers are reviewed in the context of their performance characteristics. The chapter on design considerations forms an extension of the property and testing discussions. Although informative, the text is cut-and-dry. Specific examples or case studies would have helped illustrate certain points.

The third part is focused on forms, particular applications and uses of plastics. Discussions center around sheets, films, flexible circuits, tapes, and adhesives. One chapter is devoted to polymers in microelectronics, where general concepts about resists and electronics packaging are examined. The final part lists several sources of information such as professional societies, databases, and business and government publications.

The overall contribution of this book is the compilation of industrially relevant information on plastics for electrical applications. Although it does not cover fundamental polymer principles extensively, it does fill a gap between textbooks and handbooks. While it does not delve into any given subject in great detail, it touches on a large number of topics. Hence, it can be relied on as one key reference for practitioners in the electrical industry. The book will be particularly useful for those already familiar with the basics of polymer science and engineering.

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