

High Energy Materials

High-energy materials are fascinating and exceptional, and are of both academic and general interest. Because of their many different military and civil applications and special requirements, continual research is essential.

Specialist journals contain many articles about topical aspects such as environmental compatibility, nano-scale materials, and desensitization. However, up to now there has been no book describing in detail the developments in the field of high-energy materials during the last 50 years. One reason for that is the unfortunate tendency towards a rigid separation of research results from the different areas of application. High-energy materials are now usually divided into the areas of explosives, propellants, and pyrotechnics. That classification is also followed in the book *High Energy Materials—Propellants, Explosives and Pyrotechnics* by Jai Prakash Agrawal, who is already well known as a co-author of the highly-regarded book *Organic Chemistry of Explosives*. In his new book the author, a PhD chemist who lives in India and is the former director of materials of the Indian Defense Research and Development Organization, builds on his long experience and fundamental knowledge of explosives and propellants.

The work is clearly and appropriately divided into six chapters, and leads the reader through almost every aspect of high-energy materials. It is written in a way that is also understandable for readers other than chemists. The first chapter is concerned with explosives, and deals not only with typical properties but also with special properties. The chapter is rather dense and heavy on text, but that uniformity is broken up by tables of definitions and data for all areas of application of explosives (military and civil, nuclear and conventional, mining, road construction, and the oil industry). The extensive tables contain a wealth of data, but

some readers will be disappointed to find no references to original literature.

Chapter 2 describes the history of high-energy materials. The author emphasizes the importance of new compounds that have been introduced during the last 50 years. However, the description fails to mention some very successful and promising compounds developed by research groups in Germany and the USA during the last three years. Unfortunately, the order of presentation in Chapter 2 does not correspond to the different properties of the compounds, and readers might find that slightly confusing.

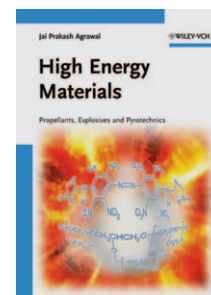
Chapter 3 gives a nice detailed overview of various production and processing methods and test procedures for high-energy materials. Chapters 4 and 5 are devoted to propellants and pyrotechnic products. Chapter 6, which deals with safety, classification, and risk evaluation of high-energy materials, is especially good.

Readers have quick access to specific information through the comprehensive index and the detailed list of contents. The 12-page list of abbreviations also aids one's understanding of the contents. The chapters provide an excellent overview covering most aspects of high-energy materials. However, the book is not suitable for readers who want detailed laboratory recipes or practical suggestions for the development of highly energetic materials. The work is intended for everybody who seeks a detailed overview of all areas of high-energy materials, explosives, propellants, and pyrotechnics. *High Energy Materials—Propellants, Explosives and Pyrotechnics* is a useful book for researchers and post-graduate students interested in this field, and is an important aid for characterization of these materials. Compared with encyclopedic books in which the contents are arranged alphabetically, it is unlikely to become a standard work of reference on the subject.

Joerg Stierstorfer, Thomas M. Klapötke

Ludwig-Maximilians-Universität, Munich (Germany)

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