

BIASED BUT NOT UNDULY SO

Title High Temperature Compounds of Rare Earth Metals with Non Metals

Author G. V. Samsonov

Publisher Consultants Bureau, 1965

Pages xiii + 280

Price \$17.50

Reviewer Adrian H. Daane

This is a translation of a Russian book that appeared in 1964. It contains a detailed survey of information on borides, carbides, nitrides, silicides, and sulfides of the rare earths and is particularly complete in its coverage of the work that has been done in Russia. The work done in other countries is also well covered, and the bias in favor of the Russian work is no more than would be shown by a corresponding publication from this country.

The book will be of interest to those persons interested in the above compounds of the rare earths, because, in addition to the survey of work done on these materials, Samsonov has discussed the bonding in these compounds from his own point of view. It is well done. The detailed discussion of some of the applications of some of these compounds, particularly the borides, shows a familiarity with work in this country. The use of borides as electron emitting materials in vacuum tubes appears to be at a significant level in Russia.

The methods of preparing many of these compounds suggest that the Russians do not have pure metals available to the degree that they are in this country, because most of the syntheses show a preference for starting with the rare-earth oxides and reducing them with a material that will evolve a volatile oxide. The analyses of the products of these reactions do not include oxygen analyses, and I look with suspicion on such techniques, knowing the extreme difficulty in eliminating the last traces of oxygen from rare-earth compounds. In fact, the effect of small amounts of oxygen on many of the electrical properties of these compounds seems to be a problem that has not been confronted, primarily because of the difficulty in analyzing such refractory materials for oxygen.

The book contains some cumbersome sentences that stem from the the translation being done by someone not completely familiar with the rare-earth elements. For instance, on page six, the phrase "lanthanide compression" is used, whereas "lanthanide contraction" normally would be used. However, the intent of the writer is not obscure, and I found the book interesting and a welcome addition to the growing shelf of books on the rare earths. It will be wanted by high-temperature inorganic chemists and metallurgists for their own personal shelves, and it belongs in any good scientific reference library. With the growing volume of scientific literature available, it is not likely to be a book selected for his personal library by the general scientist or engineer not in this field.

Adrian H. Daane is Professor and Head of the Department of Chemistry at Kansas State University and was formerly Senior Chemist at the Ames Laboratory and Professor of Chemistry at Iowa State University, where he collaborated on work on the rare-earth elements. In 1952, he and D. H. Dennison devised the method of preparing samarium, europium, and ytterbium metals that made the metals available for the first time and showed europium and ytterbium to be alkaline-earth-like in the metallic state. His PhD degree in chemistry is from Iowa State University (1950).

COGENT AND ENTERTAINING

Title Science USA

Author William Gilman

Publisher Viking Press 1965

Pages xii + 499

Price \$7.95

Reviewer Dudley Thompson

In the process of skimming a book for the purpose of becoming sufficiently familiar with its contents to make a logical choice of reviewer, an editor occasionally finds himself so engrossed with the subject matter or the style of writing that his skimming turns to real reading. When this happens he must either force himself to put the book down, or succumb, let the rest of his work slide, and indulge himself for the time his conscience allows. This book presented such an occasion. Nearly 500 pages later, I had not the slightest regret for having selected the latter course of action.

The flyleaf of this volume opens with the observation that "The middle of a revolution is a bad spot from which to get one's bearings." This is certainly true of the revolutionaries whose subjectivity is suspect, at best. As an interested observer, Mr. Gilman has taken a navigator's position of objectivity, biased slightly in favor of the rebellion, and proceeds to a remarkably complete analysis of the role of science and technology in today's society. True enough, he concentrates on the more glamorous fields with only brief allusions to such fields as astronomy, geology, and low-energy physics, but all in all, credit (and blame) is properly assigned.

Candidly popular in style, the summaries of the status of various research fields are nevertheless accurate and clear. If the specialist complains of a certain naiveté in presentation, the generalist will find the absence of sophistry refreshing.

The author's skill and experience as a writer are most artfully applied in his treatment of the relationship between the scientific community and the federal government. His declaration in the Preface of an intent to write "... about real people doing real things ..." is carried to fruition most capably in this portion of the book. When he complains of the inbred characteristics of the quasi-official