TRENDS IN MÖSSBAUER SPECTROSCOPY

Title Applications of the Mössbauer Effect in Chemistry and Solid-State Physics

Publisher International Atomic Energy Agency, Vienna, 1966

Pages 267

Price $6.00

Reviewer Morton Kaplan

The recently discovered Mössbauer effect is an example of a phenomenon which has found application in many diverse fields of research. To assess the current status of development, the International Atomic Energy Agency convened a panel on April 26-30, 1965, to review the situation and discuss possible directions for future work, particularly in the areas of chemistry and solid-state physics. This book is presented as the report of the panel, and consists of the collection of papers given by participants at the Vienna meeting.

The program is divided into several sections, dealing with theory, apparatus and techniques, structural investigations, etc. In practice, the contents of individual papers frequently overlap these areas somewhat, which seems to be more or less true of most conferences. Each paper is an independent contribution, unified unto itself, which makes it possible for the reader to pick and choose according to his interests. However, this has the consequence of a certain amount of repetitiveness for one reading the whole book.

Most of the material presented in the book is not new, and can be found as published articles in various journals. The virtue of the book is that it presents, in one place, a representative view of work being done in the field, and there are adequate references given to enable the reader to follow a particular line of interest. There is apparently some confusion as to the intended audience, since rather elementary concepts are frequently spelled out in detail, whereas more advanced ideas appear with relatively little elaboration. For an individual active in the field, the book is a worthwhile addition to his collection, even though he will have seen some of the material in other places. Of particular value to this reviewer were the excellent discussions of surface phenomena and scattering experiments in the papers by Frauenfelder and collaborators. To the uninitiated, the book may serve as a useful source of ideas, but some readers will probably want to have prior acquaintance with one or more of the standard review articles on the Mössbauer effect.

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TIMELY AND STIMULATING

Title Containing the Arms Race—Some Specific Proposals

Author Jeremy J. Stone

Publisher The M. I. T. Press, 1966

Pages xvi + 252

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Reviewer W. A. Higinbotham

Thanks to the efforts of ANS members and to generous public support, nuclear power has come of age and nuclear power plants are spreading around the world. As a source of cheap and clean power they should materially improve man's lot. But at the same time they will put large amounts of plutonium into the hands of many independent and sometimes belligerent nations. Already, the vast nuclear military forces of the major powers present a grave danger to society. The uncontrolled spread of nuclear plants will create many additional problems. Currently, a treaty to prevent further proliferation of nuclear weapons is under active consideration. Hopefully, this will soon come into effect. But this, like the partial nuclear test ban, will have little effect in slowing the arms race unless other arms control measures are soon adopted and the difficult process of creating an international security structure is begun.

Containing The Arms Race—Some Specific Proposals is a descriptive title. Author Stone elects to discuss a few modest steps which appear to be negotiable at the present time, which might serve to decrease the rate of nuclear weapons development, and which might lead to more substantial arms-control agreements. Specifically, the measures are: a freeze on antiballistic missile systems, bomber disarmament, a reduction in long-range missiles, and a freeze on procurement of strategic weapons. These are all topics which have been seriously proposed for discussion in the 18-nation disarmament committee.

The analysis of the ABM freeze is especially timely, since that subject will be sharply debated this year. There is considerable evidence that the Soviet Union is presently installing ballistic missile defenses on a substantial scale. Many US arms-controllers fear that an ABM race will initiate a new round of research and procurement which will leave the world even less secure than it is now. Soviet arms controllers, on the other hand, argue that defensive measures are consistent with stability and disarmament; and one gets the impression that the Russians will not agree to stop.

As Dr. Stone points out, the United States may respond by building an ABM system, accompanied by an extensive civil defense program, or it may simply improve the quantity and quality of its strategic weapons. Either way, it is costly and the world as a whole is probably less secure.

It is impossible to summarize the ABM discussion in a brief review. The treatment of this topic and of the other proposals, too, is