

Introduction

The June 1968 Symposium on Radiation Effects on Structural Metals was the fourth in a series of related international conferences that have been held on a biennial basis. The symposium, sponsored by ASTM Committee E-10 on Radioisotopes and Radiation Effects, had the primary objective of reviewing recent research data on the effects of nuclear radiation on reactor structural alloys. Secondary objectives included: evaluation of the engineering implications of observed effects, techniques for minimizing detrimental aspects of radiation-induced changes in properties, understanding the mechanisms of radiation effects in various alloy systems, and metallurgical techniques for assuring superior materials in advanced reactors such as the fast breeder system.

The several sessions of the symposium were planned to cover important aspects of the general topic with carefully selected papers by recognized experts from many countries. This volume is accordingly divided by session topic to facilitate the reader's review in terms of his preferred interest. These topics include (1) materials for thermal (current) power reactors, including core structural and cladding alloys as well as pressure vessel steels; (2) mechanisms of radiation damage in pressure vessel steels; (3) recent advances in reactor materials for both thermal and fast reactors; and (4) the rapidly growing field of fast reactor materials technology. Authors presented the most recent work on the subject from their respective homelands—Canada, France, Germany, Japan, Sweden, United Kingdom, and the United States. These authors represented nineteen laboratories that are in the forefront of nuclear materials research and development.

The recurring theme of the technical papers and the subsequent discussions was that of understanding the observed radiation damage so as to prevent or correct any serious consequence in important components of nuclear reactor systems. The broad author representation assured fertile discussion in what clearly is a rapidly advancing field that represents the general interest of the nuclear community in assuring the integrity of complex nuclear structures.

Rapid advances in nuclear materials technology were evident from the symposium and suggest the importance of the papers published herein as well as the need for followup symposia to develop further the informa-

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tion exchange initiated in this and preceding symposia of this series. The authors and discussers are commended for their excellent presentation of both the problems and some solutions in the field of nuclear radiation damage of materials.

It is regretted that so few of the intended United Kingdom representatives were able to attend due to the accidental death soon after his arrival in the United States of one of their members, Dr. Peter C. L. Pfeil, of the Harwell Laboratory. Dr. Pfeil will be remembered by all of his colleagues for his keen and probing mind and for his quiet good nature.