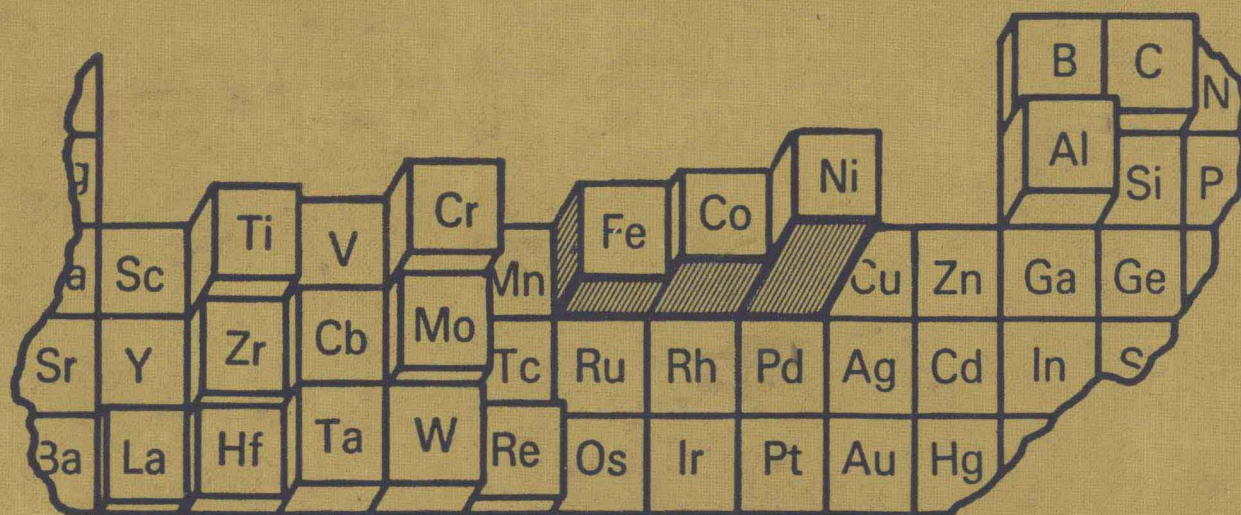


SUPERALLOYS

1988



Edited by
D.N. Duhl
G. Maurer
S. Antolovich
C. Lund
S. Reichman

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Proceedings of the Sixth International Symposium on Superalloys sponsored by the High Temperature Alloys Committee of The Metallurgical Society, held September 18-22, 1988, Seven Springs Mountain Resort, Champion, Pennsylvania.

Edited by
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Dedication

The Symposium and these proceedings are dedicated to honor the pioneering contribution of Mr. Herbert L. Eiselstein to the superalloy and gas turbine industry.

Preface

The purpose of this International Symposium is to bring together into one forum the most up-to-date technical knowledge on high strength, high temperature alloys commonly known as superalloys. Historically, this Symposium has been a "bench-mark" on what technical directions have been taken and what progress has been made during the four-year intervals between meetings.

The diversity of superalloy technology has greatly expanded during the twenty years this Symposium has been in existence. The initial symposium focused on the alloy problems associated with phase stability. Subsequent symposia highlighted conventional processing, minor element effects, strategic materials, and advanced processing such as single-crystal castings and powder metallurgy. This year's proceedings includes a wide spectrum of papers on superalloys which reflect the present diverse nature of the technology.

One unique aspect of this year's symposium is the attention paid to alternate materials. Awareness of the potential benefits of advanced metal matrix and ceramic composites is particularly useful in defining the full potential for superalloys in the future. There is no doubt that gas turbine engines of the future will require materials with capabilities different than those of current superalloys. Despite this trend, the uses and sophistication of superalloys are expected to grow, creating a more vital class of materials.

Each Seven Springs Symposium and the corresponding volume is dedicated to an individual as a means of honoring that individual for his or her contribution to the superalloy industry. The individual is selected by a long process of nomination, review, and final selection by the Seven Springs Committee and the High Temperature Alloy Committee of TMS. From a list of many individuals who have made major contributions, a dedicatee is selected whose accomplishments are clearly recognized by the entire industry. This Symposium is dedicated to **Herbert L. Eiselstein** for his contributions involving alloy design, development, and processing. During his 30 years at Huntington Alloys, Mr. Eiselstein authored and co-authored numerous publications dealing with alloying effects, heat treatment, and physical metallurgy of superalloys. Patents which bear his name include those for Inconel 718, Inconel 625, and Inconel 903. Inconel 718 is recognized as one of the most important superalloys used in gas turbine applications. The growing use of Inconel 718 in aerospace and other applications is further evidence of the importance of his internationally recognized accomplishments.

Each International Symposium on Superalloys transpires because of the efforts of those individuals who directly worked on this Symposium and those individuals who laid the groundwork at previous symposia. The following Seven Springs Committee represents the formal group which

brought together a vast number of details to produce this international forum and to publish a proceedings that will always be a valuable reference to those in the industry.

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Special recognition is also deserved by **Susan Floridio** of PWA for her special effort in putting together this book.

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Powder Metallurgical and Wrought Alloys

