Handbook of
Thermal Spray Technology

Edited by
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Prepared under the direction of the
Thermal Spray Society Training Committee

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Handbook of Thermal Spray Technology (#06994G)
Preface

Thermal spray technology encompasses a group of coating processes that provide functional surfaces to protect or improve the performance of a substrate or component. Many types and forms of materials can be thermal sprayed—which is why thermal spray is used worldwide to provide protection from corrosion, wear, and heat; to restore and repair components; and for a variety of other applications.

This handbook is intended to be an extensive reference guide to thermal spray technology. It covers principles, processes, types of coatings, applications, performance, and testing/analysis. It will serve as an excellent introduction and guidebook for those who are new to thermal spray. The handbook provides in-depth coverage and data that will be of great value to specifiers and users of thermal spray coatings, as well as to thermal spray experts who need additional background in certain areas. This handbook also was tailored with undergraduate and graduate students in mind so that they too can be exposed to the excitement of thermal spray technology.

The Thermal Spray Society (TSS) is pleased to serve as copublisher with ASM International for this important work. The genesis for this project was the plan to revise the ASM International home-study course on thermal spray, first published in 1992. That endeavor was well underway in 2002 when the Reference Publications Department at ASM International developed a proposal for a handbook on thermal spray technology. At the October 2002 meeting of the Thermal Spray Society Board, the decision was made to merge the two projects. The lesson materials were revised extensively and then augmented with additional information to round out the coverage and create a comprehensive reference handbook.

This project truly has been a team effort. The main driver and guiding force has been the TSS Training Committee, which has overseen the volunteer contributions to the handbook and otherwise contributed mightily to make the handbook a reality. Special recognition is due to Richard Knight, former chair of the committee, for his detailed technical review of the revised lesson materials. Several other committee members have served as authors and reviewers for the handbook. For ASM International, Joanne Miller initially served as the staff project coordinator for the revision of the homestudy course. The project was transferred to Scott Henry when it was decided to transform the narrow scope of the content into a more all-encompassing and comprehensive reference handbook.

We were fortunate in attracting Joseph R. Davis to act as Editor of the project in 2002. Joe has excelled in tying the materials together and adding additional key reference content to complete the coverage of the handbook, as well as dealing with many pragmatic issues such as meeting tight deadlines. Of course, the most important involvement in the project has been provided by the authors, reviewers, and other contributors who have created the content contained in these pages.

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Dedication

This handbook is dedicated to the memory of Douglas H. Harris (1936–2001), who made enormous contributions to the practice and implementation of thermal spray over a period of more than 35 years. Doug wrote the section on thermal spray applications for the 1992 ASM homestudy course, *Thermal Spray Technology*. He contributed to the revision and updating of the applications section for this handbook before he passed away in 2001.

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