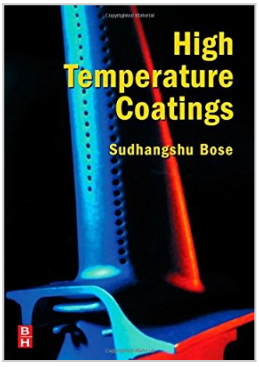

High Temperature Coatings

By Sudhangshu Bose

High Temperature Coatings By Sudhangshu Bose

High Temperature Coatings demonstrates how to counteract the thermal effects of the rapid corrosion and degradation of exposed materials and equipment that can occur under high operating temperatures. This is the first true practical guide on the use of thermally-protective coatings for high-temperature applications, including the latest developments in materials used for protective coatings. It covers the make-up and behavior of such materials under thermal stress and the methods used for applying them to specific types of substrates, as well as invaluable advice on inspection and repair of existing thermal coatings.

With his long experience in the aerospace gas turbine industry, the author has compiled the very latest in coating materials and coating technologies, as well as hard-to-find guidance on maintaining and repairing thermal coatings, including appropriate inspection protocols. The book will be supplemented with the latest reference information and additional support for finding more application-type and industry-type coatings specifications and uses, with help for the reader in finding more detailed information on a specific type of coating or a specific type of use.

· Offers overview of the underlying fundamental concepts of thermally-protective coatings, including thermodynamics, energy kinetics, crystallography, and equilibrium phases
· Covers essential chemistry and physics of underlying substrates, including steels, nickel-iron alloys, nickel-cobalt alloys, and titanium alloys
· Provides detailed guidance on wide variety of coating types, including those used against high temperature corrosion and oxidative degradation, as well as thermal barrier coatings

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Editorial Review

From the Back Cover
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Technology: Engineering. General

High Temperature Coatings

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Fellow, Pratt & Whitney
Adjunct Professor, Rensselaer Polytechnic Institute, Hartford
Hartford, CT

KEY FEATURES
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Contents: Preface; Chapter One: Introduction; Chapter Two: Fundamental Concepts; Chapter Three: Substrate Alloys; Chapter 4: Oxidation; Chapter Five: High Temperature Corrosion; Chapter Six: Oxidation & Corrosion Resistant Coatings; Chapter Seven: Thermal Barrier Coatings (TBC); Chapter Eight: Nondestructive Inspection of Coatings; Chapter Nine: Coatings Repair; Chapter Ten: Field and Simulated Field Experience; Appendix; Index

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Dr. Sudhangshu Bose is a retired Fellow and Manager at Pratt & Whitney, the manufacturer of Gas Turbine and Rocket Engines. He has also been Professor of Practice in Mechanical Engineering at Rensselaer Polytechnic Institute, Troy, New York and Hartford, Connecticut, USA. He holds a Ph.D in Materials Science and Engineering from University of California, Berkeley, having previously obtained B.Sc (Honors) and M.Sc in Physics from Ranchi University, Ranchi, India. Dr. Bose has taught undergraduate and graduate level courses in Physics and conducted research in Materials Characterization by X-ray diffraction prior to completing the doctoral degree. While at Pratt & Whitney and its sister divisions, Dr. Bose has conducted and managed research, development, and testing of advanced materials and processes including oxidation and corrosion in fuel cells and gas turbine engine, catalysis, high temperature coatings, superalloys, intermetallics, and ceramic matrix composites. He holds over 24 patents. As a Professor of Practice at Rensselaer, he taught courses and supervised research in the areas of Superalloys, High Temperature Coatings, and Conventional and Renewable Energy Technologies. He is currently associated with the Department of Mechanical Engineering and Materials Science at Yale University, New Haven, Connecticut.

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