

1. Record Nr.	UNINA9910458087903321
Autore	Modest M. F (Michael F.)
Titolo	Radiative heat transfer [[electronic resource] /] / Michael F. Modest
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Academic Press, c2003
ISBN	1-281-11929-6 9786611119294 0-08-051563-0
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (845 p.)
Disciplina	621.402/27
Soggetti	Heat - Transmission Heat - Radiation and absorption Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	Front Cover; Radiative Heat Transfer; Copyright Page; Contents; Preface to the Second Edition; List of Symbols; Chapter 1. Fundamentals of Thermal Radiation; 1.1 Introduction; 1.2 The Nature of Thermal Radiation; 1.3 Basic Laws of Thermal Radiation; 1.4 Emissive Power; 1.5 Solid Angles; 1.6 Radiative Intensity; 1.7 Radiative Heat Flux; 1.8 Radiation Pressure; 1.9 Visible Radiation (Luminance); 1.10 Introduction to Radiation Characteristics of Opaque Surfaces; 1.11 Introduction to Radiation Characteristics of Gases; 1.12 Introduction to Radiation Characteristics of Solids and Liquids 1.13 Introduction to Radiation Characteristics of Particles 1.14 Outline of Radiative Transport Theory; References; Problems; Chapter 2. Radiative Property Predictions from Electromagnetic Wave Theory; 2.1 Introduction; 2.2 The Macroscopic Maxwell Equations; 2.3 Electromagnetic Wave Propagation in Unbounded Media; 2.4 Polarization; 2.5 Reflection and Transmission; 2.6 Theories for Optical Constants; References; Problems; Chapter 3. Radiative Properties of Real Surfaces; 3.1 Introduction; 3.2 Definitions; 3.3 Predictions from Electromagnetic Wave Theory; 3.4 Radiative Properties of Metals 3.5 Radiative Properties of Nonconductors 3.6 Effects of Surface Roughness; 3.7 Effects of Surface Damage and Oxide Films; 3.8

Radiative Properties of Semitransparent Sheets; 3.9 Special Surfaces; 3.10 Experimental Methods; References; Problems; Chapter 4. View Factors; 4.1 Introduction; 4.2 Definition of View Factors; 4.3 Methods for the Evaluation of View Factors; 4.4 Area Integration; 4.5 Contour Integration; 4.6 View Factor Algebra; 4.7 The Crossed-Strings Method; 4.8 The Inside-Sphere Method; 4.9 The Unit Sphere Method; References; Problems

Chapter 5. Radiative Exchange Between Gray, Diffuse Surfaces 5.1 Introduction; 5.2 Radiative Exchange Between Black Surfaces; 5.3 Radiative Exchange Between Gray, Diffuse Surfaces; 5.4 Electrical Network Analogy; 5.5 Solution Methods for the Governing Integral Equations; References; Problems; Chapter 6. Radiative Exchange Between Partially-Specular Gray Surfaces; 6.1 Introduction; 6.2 Specular View Factors; 6.3 Enclosures with Partially-Specular Surfaces; 6.4 Electrical Network Analogy; 6.5 Radiation Shields; 6.6 Semitransparent Sheets (Windows); 6.7 Solution of the Governing Integral Equation 6.8 Concluding Remarks References; Problems; Chapter 7. Radiative Exchange Between Nonideal Surfaces; 7.1 Introduction; 7.2 Radiative Exchange Between Nongray Surfaces; 7.3 Directionally Nonideal Surfaces; 7.4 Analysis for Arbitrary Surface Characteristics; References; Problems; Chapter 8. Surface Radiative Exchange in the Presence of Conduction and Convection; 8.1 Introduction; 8.2 Conduction and Surface Radiation-Fins; 8.3 Convection and Surface Radiation; References; Problems; Chapter 9. The Equation of Radiative Transfer in Participating Media; 9.1 Introduction 9.2 Radiative Intensity in Vacuum

Sommario/riassunto

The most comprehensive and detailed treatment of thermal radiation heat transfer available for graduate students, as well as senior undergraduate students, practicing engineers and physicists is enhanced by an excellent writing style with nice historical highlights and a clear and consistent notation throughout. Modest presents radiative heat transfer and its interactions with other modes of heat transfer in a coherent and integrated manner emphasizing the fundamentals. Numerous worked examples, a large number of problems, many based on real world situations, and an up-to-date bibliography
