1.	Record Nr.	UNINA9910146741103321
	Autore	Brandon David
	Titolo	Microstructural Characterization of Materials [[electronic resource]]
	Pubbl/distr/stampa	Hoboken, : Wiley, 2008
	ISBN	1-282-34294-0 9786612342943 0-470-72712-8 0-470-72713-6
	Edizione	[2nd ed.]
	Descrizione fisica	1 online resource (554 p.)
	Collana	Quantitative software engineering series Microstructural characterization of materials
	Altri autori (Persone)	KaplanWayne D BrandonD. G
	Disciplina	620.1/1299
	Soggetti	Electronic books. -- local Materials -- Microscopy Microstructure Materials - Microscopy Materials Science Chemical & Materials Engineering Engineering & Applied Sciences Electronic books.
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Note generali	Description based upon print version of record.
	Nota di contenuto	Microstructural Characterization of Materials; Contents; Preface to the Second Edition; Preface to the First Edition; 1 The Concept of Microstructure; 1.1 Microstructural Features; 1.1.1 Structure-Property Relationships; 1.1.2 Microstructural Scale; 1.1.3 Microstructural Parameters; 1.2 Crystallography and Crystal Structure; 1.2.1 Interatomic Bonding in Solids; 1.2.2 Crystalline and Amorphous Phases; 1.2.3 The Crystal Lattice; Summary; Bibliography; Worked Examples; Problems; 2 Diffraction Analysis of Crystal Structure; 2.1 Scattering of Radiation by Crystals 2.1.1 The Laue Equations and Bragg's Law2.1.2 Allowed and Forbidden Reflections; 2.2 Reciprocal Space; 2.2.1 The Limiting Sphere

Construction; 2.2.2 Vector Representation of Bragg's Law; 2.2.3 The Reciprocal Lattice; 2.3 X-Ray Diffraction Methods; 2.3.1 The X-Ray Diffractometer; 2.3.2 Powder Diffraction-Particles and Polycrystals; 2.3.3 Single Crystal Laue Diffraction; 2.3.4 Rotating Single Crystal Methods; 2.4 Diffraction Analysis; 2.4.1 Atomic Scattering Factors; 2.4.2 Scattering by the Unit Cell; 2.4.3 The Structure Factor in the Complex Plane
2.4.4 Interpretation of Diffracted Intensities2.4.5 Errors and Assumptions; 2.5 Electron Diffraction; 2.5.1 Wave Properties of Electrons; 2.5.2 Ring Patterns, Spot Patterns and Laue Zones; 2.5.3 Kikuchi Patterns and Their Interpretation; Summary; Bibliography; Worked Examples; Problems; 3 Optical Microscopy; 3.1 Geometrical Optics; 3.1.1 Optical Image Formation; 3.1.2 Resolution in the Optical Microscope; 3.1.3 Depth of Field and Depth of Focus; 3.2 Construction of the Microscope; 3.2.1 Light Sources and Condenser Systems; 3.2.2 The Specimen Stage; 3.2.3 Selection of Objective Lenses
3.2.4 Image Observation and Recording3.3 Specimen Preparation; 3.3.1 Sampling and Sectioning; 3.3.2 Mounting and Grinding; 3.3.3 Polishing and Etching Methods; 3.4 Image Contrast; 3.4.1 Reflection and Absorption of Light; 3.4.2 Bright-Field and Dark-Field Image Contrast; 3.4.3 Confocal Microscopy; 3.4.4 Interference Contrast and Interference Microscopy; 3.4.5 Optical Anisotropy and Polarized Light; 3.4.6 Phase Contrast Microscopy; 3.5 Working with Digital Images; 3.5.1 Data Collection and The Optical System; 3.5.2 Data Processing and Analysis; 3.5.3 Data Storage and Presentation
3.5.4 Dynamic Range and Digital Storage3.6 Resolution, Contrast and Image Interpretation; Summary; Bibliography; Worked Examples; Problems; 4 Transmission Electron Microscopy; 4.1 Basic Principles; 4.1.1 Wave Properties of Electrons; 4.1.2 Resolution Limitations and Lens Aberrations; 4.1.3 Comparative Performance of Transmission and Scanning Electron Microscopy; 4.2 Specimen Preparation; 4.2.1 Mechanical Thinning; 4.2.2 Electrochemical Thinning; 4.2.3 Ion Milling; 4.2.4 Sputter Coating and Carbon Coating; 4.2.5 Replica Methods; 4.3 The Origin of Contrast; 4.3.1 Mass-Thickness Contrast
4.3.2 Diffraction Contrast and Crystal Lattice Defects

Sommario/riassunto

Microstructural characterization is usually achieved by allowing some form of probe to interact with a carefully prepared specimen. The most commonly used probes are visible light, X-ray radiation, a high-energy electron beam, or a sharp, flexible needle. These four types of probe form the basis for optical microscopy, X-ray diffraction, electron microscopy, and scanning probe microscopy.

 <i>Microstructural Characterization of Materials, 2nd Edition</i> is an introduction to the expertise involved in assessing the microstructure of engineering materials and to the experimental met

2.	Record Nr.	UNINA9910784767303321
	Autore	Vazquez Rafael
	Titolo	Control of turbulent and magnetohydrodynamic channel flows [[electronic resource]] : boundary stabilization and state estimation / / Rafael Vazquez, Miroslav Krstic
	Pubbl/distr/stampa	Boston, : Birkhauser, c2008
	ISBN	1-281-11731-5 9786611117313 0-8176-4699-X
	Edizione	[1st ed. 2008.]
	Descrizione fisica	1 online resource (220 p.)
	Collana	Systems & control: foundations & applications
	Altri autori (Persone)	KrsticMiroslav
	Disciplina	532 532.0527
	Soggetti	Boundary layer Magnetohydrodynamics Turbulence
	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 (p. [199]-207) and index.
	Nota di contenuto	Thermal-Fluid Convection Loop: Boundary Stabilization -- Thermal-Fluid Convection Loop: Boundary Estimation and Output-Feedback Stabilization -- 2D Navier–Stokes Channel Flow: Boundary Stabilization -- 2D Navier–Stokes Channel Flow: Boundary Estimation -- 3D Magnetohydrodynamic Channel Flow: Boundary Stabilization -- 3D Magnetohydrodynamic Channel Flow: Boundary Estimation -- 2D Navier–Stokes Channel Flow: Stable Flow Transfer -- Open Problems.
	Sommario/riassunto	This monograph presents new constructive design methods for boundary stabilization and boundary estimation for several classes of benchmark problems in flow control, with potential applications to turbulence control, weather forecasting, and plasma control. The basis of the approach used in the work is the recently developed continuous backstepping method for parabolic partial differential equations, expanding the applicability of boundary controllers for flow systems from low Reynolds numbers to high Reynolds number conditions. Efforts in flow control over the last few years have led to a wide range of developments in many different directions, but most implementable

developments thus far have been obtained using discretized versions of the plant models and finite-dimensional control techniques. In contrast, the design methods examined in this book are based on the “continuum” version of the backstepping approach, applied to the PDE model of the flow. The postponement of spatial discretization until the implementation stage offers a range of numerical and analytical advantages. Specific topics and features: * Introduction of control and state estimation designs for flows that include thermal convection and electric conductivity, namely, flows where instability may be driven by thermal gradients and external magnetic fields. * Application of a special "backstepping" approach where the boundary control design is combined with a particular Volterra transformation of the flow variables, which yields not only the stabilization of the flow, but also the explicit solvability of the closed-loop system. * Presentation of a result unprecedented in fluid dynamics and in the analysis of Navier–Stokes equations: closed-form expressions for the solutions of linearized Navier–Stokes equations under feedback. * Extension of the backstepping approach to eliminate one of the well-recognized root causes of transition to turbulence: the decoupling of the Orr–Sommerfeld and Squire systems. Control of Turbulent and Magnetohydrodynamic Channel Flows is an excellent reference for a broad, interdisciplinary engineering and mathematics audience: control theorists, fluid mechanicists, mechanical engineers, aerospace engineers, chemical engineers, electrical engineers, applied mathematicians, as well as research and graduate students in the above areas. The book may also be used as a supplementary text for graduate courses on control of distributed-parameter systems and on flow control. .