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Altri autori (Persone)	Honeycombe R. W. K (Robert William Kerr)
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Nota di contenuto	Front cover; Title page; Copyright page; Table of contents; Preface to the first edition; Preface to the second edition; Preface to the third edition; 1 Iron and its interstitial solid solutions; 1.1 Introduction; 1.2 The allotropes of pure iron; 1.2.1 Thin films and isolated particles; 1.3 The phase transformation: - and -iron; 1.3.1 Mechanisms of transformation; 1.4 Carbon and nitrogen in solution in - and -iron; 1.4.1 Solubility of carbon and nitrogen in - and -iron; 1.4.2 Diffusion of solutes in iron; 1.4.3 Precipitation of carbon and nitrogen from -iron; 1.5 Some practical aspects Further reading 2 The strengthening of iron and its alloys; 2.1 Introduction; 2.2 Work hardening; 2.3 Solid solution strengthening by interstitials; 2.3.1 The yield point; 2.3.2 The role of interstitial elements in yield phenomena; 2.3.3 Strengthening at high interstitial concentrations; 2.4 Substitutional solid solution strengthening of iron; 2.5 Grain size; 2.5.1 Hall-Petch effect; 2.5.2 Nanostructured steels; 2.6 Dispersion strengthening; 2.7 An overall view; 2.8 Some practical aspects; 2.9 Limits to strength; 2.9.1 Theoretical strength; 2.9.2

Gigatubes; 2.9.3 Fracture; Further reading

4 The effects of alloying elements on iron-carbon alloys 4.1 The α - and γ -phase fields; 4.2 The distribution of alloying elements in steels; 4.3 The effect of alloying elements on the kinetics of the γ transformation; 4.3.1 The effect of alloying elements on the ferrite reaction; 4.3.2 The effect of alloying elements on the pearlite reaction; 4.4 Structural changes resulting from alloying additions; 4.4.1 Ferrite/alloy carbide aggregates; 4.4.2 Alloy carbide fibres and laths; 4.4.3 Interphase precipitation; 4.4.4 Nucleation in supersaturated ferrite
4.5 Transformation diagrams for alloy steels Further reading; 5 Formation of martensite; 5.1 Introduction; 5.2 General characteristics; 5.2.1 The habit plane; 5.2.2 Orientation relationships; 5.2.3 Structure of the interface; 5.2.4 The shape deformation; 5.3 The crystal structure of martensite; 5.4 The crystallography of martensitic transformations; 5.5 The morphology of ferrous martensites; 5.5.1 Low carbon martensite; 5.5.2 Medium carbon martensite; 5.5.3 High carbon martensite; 5.6 Kinetics of transformation to martensite; 5.6.1 Nucleation and growth of martensite
5.6.2 Effect of alloying elements

Sommario/riassunto

Steels represent the most widely-used metallic alloy, possessing a wide range of microstructures and mechanical properties. By examining the mechanical properties of steels in conjunction with microstructure this book provides a valuable description of the development and behaviour of these materials - the very foundation of their widespread use. Updated throughout and including new chapters on nanostructured steels, and new alloys and technologies for the energy and automobile industries, the book is clearly written and illustrated, with extensive bibliographies and real-life examples. An
