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Nota di contenuto	Chapter 1. Thermodynamics and phase equilibria of iron-base systems -- Chapter 2. Processing of ferrous alloys -- Chapter 3. Microalloyed steels -- Chapter 4. Advanced high strength steels -- Chapter 5. Cast iron-based alloys -- Chapter 6. Low density steels -- Chapter 7. High modulus steels -- Chapter 8. Nanostructured steels -- Chapter 9. Iron-enriched high entropy alloys -- Chapter 10. Iron-based intermetallics -- Chapter 11. Stainless steels -- Chapter 12. Electrical steels.
Sommario/riassunto	The current state of understanding of emerging iron alloys and high-alloy ferrous systems, in comparison with some conventional steels, is compiled in this single volume to further their development. While most of the conventional steels are produced routinely today, many advanced high strength steels and iron-based alloys are still in the laboratory stage. The iron-based emerging alloys can yield high levels of mechanical and physical properties due to their new alloy concepts and novel microstructures leading to multiple benefits of their use in terms of sustainability and environmental impact. This book contains introductory chapters that present the requisite background knowledge on thermodynamics, phase diagrams, and processing routes used for the ferrous alloys to enable the readers a smooth understanding of the main chapters. Then, an overview of the conventional microalloyed steels and advanced high strength steels is given to present the

benchmark of the existing steels and ferrous alloys manifesting their current state-of-the-art in terms of physical metallurgy and engineering applications. Subsequent chapters detail novel, emerging ferrous alloys and high-alloy ferrous systems. Summarizes the state-of-the-art of emerging iron-based alloys and the new processing and physical metallurgy-related developments of high-alloy iron systems; Explores new iron-based systems driven by the need for new properties, enhanced performance, sustainable processes and reduced environmental impact; Compiles cutting-edge research on the progress of materials science of iron-based systems, from physical metallurgy to engineering applications, and possible avenues for future research.

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