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| Nota di contenuto | Introduction -- Laser Additive Manufacturing (AM): Classification, Processing Philosophy, and Metallurgical Mechanisms -- Novel Ti-Based Nanocomposites by Selective Laser Melting (SLM) Additive |

Manufacturing (AM): Tailored Nanostructure and Performance -- In Situ Ti–Si Intermetallic-Based Composites by Selective Laser Melting (SLM) Additive Manufacturing (AM): Designed Materials and Laser-Tailored In Situ Formation -- In Situ WC Cemented Carbide Based Hardmetals by Selective Laser Melting (SLM) Additive Manufacturing (AM): Microstructure Characteristics and Formation Mechanisms -- Nanoscale TiC Particle Reinforced AlSi10Mg Bulk-Form Nanocomposites by Selective Laser Melting (SLM) Additive Manufacturing (AM): Tailored Microstructures and Enhanced Properties -- Novel Aluminum Based Composites by Selective Laser Melting (SLM) Additive Manufacturing (AM): Tailored Formation of Multiple Reinforcing Phases and its Mechanisms -- Particle Reinforced Cu Matrix Composites by Direct Metal Laser Sintering (DMLS) Additive Manufacturing (AM): Interface Design, Material Optimization, and Process Control -- Nano/Micron W–Cu Composites by Direct Metal Laser Sintering (DMLS) Additive Manufacturing (AM): Unique Laser-Induced Metallurgical Behavior of Insoluble System -- Summary and Prospective View.

Sommario/riassunto

This book entitled “Laser Additive Manufacturing of High-Performance Materials” covers the specific aspects of laser additive manufacturing of high-performance new materials components based on an unconventional materials incremental manufacturing philosophy, in terms of materials design and preparation, process control and optimization, and theories of physical and chemical metallurgy. This book describes the capabilities and characteristics of the development of new metallic materials components by laser additive manufacturing process, including nanostructured materials, in situ composite materials, particle reinforced metal matrix composites, etc. The topics presented in this book, similar as laser additive manufacturing technology itself, show a significant interdisciplinary feature, integrating laser technology, materials science, metallurgical engineering, and mechanical engineering. This is a book for researchers, students, practicing engineers, and manufacturing industry professionals interested in laser additive manufacturing and laser materials processing. Dongdong Gu is a Professor at College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics (NUAA), PR China.
