

Metal Additive Manufacturing: A Comprehensive Guide from Fundamentals to Applications



Metal Additive Manufacturing by James Stewart

★★★★☆ 4.3 out of 5

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Dimensions	: 6.14 x 0.56 x 9.21 inches
X-Ray for textbooks	: Enabled



By James Stewart

Metal additive manufacturing (MAM), also known as 3D metal printing, is a revolutionary manufacturing technology that has transformed the way we design and produce metal components. Unlike traditional manufacturing methods that involve subtractive processes like machining and casting, MAM builds parts layer by layer, offering unprecedented design freedom, reduced lead times, and cost-effective production.

This comprehensive book by James Stewart provides a detailed overview of MAM, covering everything from the fundamentals to advanced applications. Written in a clear and engaging style, 'Metal Additive Manufacturing' is an essential resource for engineers, designers, researchers, and anyone interested in this groundbreaking technology.

Overview of Metal Additive Manufacturing

The first chapter of the book introduces the basic principles of MAM, including the different types of technologies, materials, and design considerations. Stewart also discusses the advantages and challenges of MAM compared to traditional manufacturing methods.

Chapter 2 focuses on the various MAM technologies, including selective laser melting (SLM), powder bed fusion (PBF), directed energy deposition (DED), and binder jetting. Stewart provides a detailed explanation of each technology's process, capabilities, and limitations.

Materials for Metal Additive Manufacturing

Chapter 3 examines the different materials used in MAM, including metals, alloys, and composites. Stewart discusses the properties and characteristics of each material, as well as their suitability for specific applications.

Chapter 4 covers the design considerations for MAM, including part orientation, supports, and topology optimization. Stewart provides practical guidelines on how to design parts for optimal printability and performance.

Applications of Metal Additive Manufacturing

The second half of the book explores the various applications of MAM in different industries, including aerospace, automotive, medical, and consumer products. Stewart provides case studies and examples of how MAM is being used to create innovative and complex components.

Chapter 5 focuses on the applications of MAM in the aerospace industry, including the production of lightweight and high-performance components for aircraft and spacecraft.

Chapter 6 discusses the use of MAM in the automotive industry, including the production of prototypes, custom parts, and components for high-performance vehicles.

Chapter 7 explores the applications of MAM in the medical industry, including the production of medical devices, implants, and surgical instruments.

Chapter 8 examines the use of MAM in the consumer products industry, including the production of jewelry, fashion accessories, and sporting goods.

Future of Metal Additive Manufacturing

The final chapter of the book provides a glimpse into the future of MAM, discussing the latest advancements and emerging trends. Stewart also explores the potential impact of MAM on the manufacturing industry and the global economy.

'Metal Additive Manufacturing' by James Stewart is a comprehensive and up-to-date resource that provides a deep understanding of this

revolutionary technology. Whether you are an engineer, designer, researcher, or simply interested in the future of manufacturing, this book is an essential read.

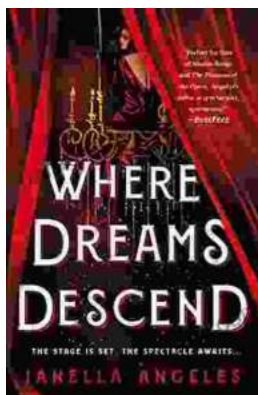
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