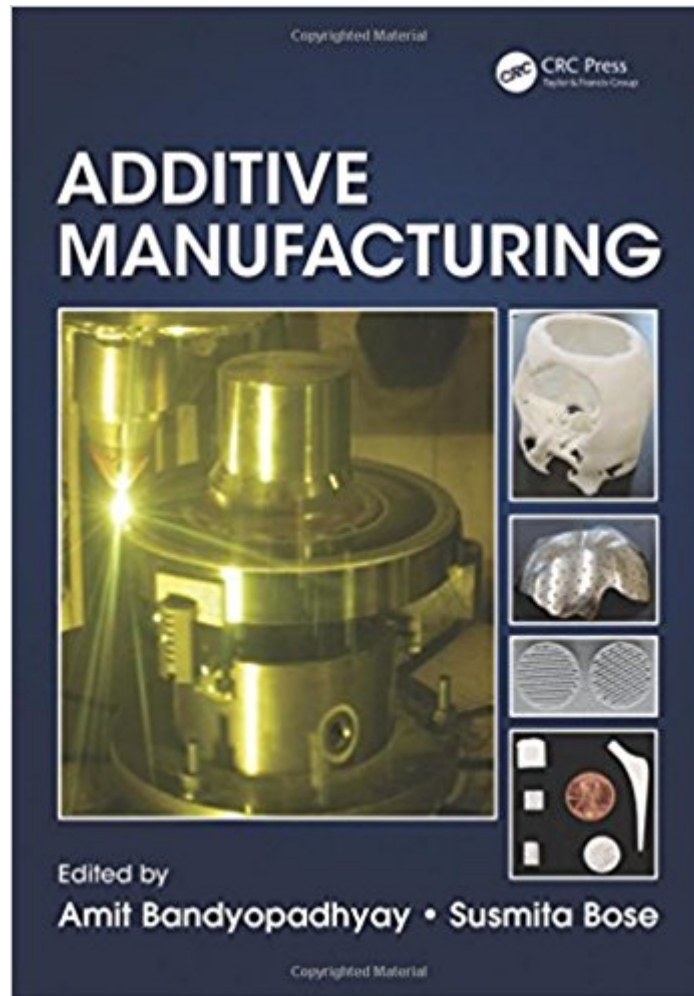




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# Additive Manufacturing



## Synopsis

The field of additive manufacturing has seen explosive growth in recent years due largely in part to renewed interest from the manufacturing sector. Conceptually, additive manufacturing, or industrial 3D printing, is a way to build parts without using any part-specific tooling or dies from the computer-aided design (CAD) file of the part. Today, most engineered devices are 3D printed first to check their shape, size, and functionality before large-scale production. In addition, as the cost of 3D printers has come down significantly, and the printers' reliability and part quality have improved, schools and universities have been investing in 3D printers to experience, explore, and innovate with these fascinating additive manufacturing technologies. Additive Manufacturing highlights the latest advancements in 3D printing and additive manufacturing technologies. Focusing on additive manufacturing applications rather than on core 3D printing technologies, this book: Introduces various additive manufacturing technologies based on their utilization in different classes of materials Discusses important application areas of additive manufacturing, including medicine, education, and the space industry Explores regulatory challenges associated with the emergence of additive manufacturing as a mature technological platform By showing how 3D printing and additive manufacturing technologies are currently used, Additive Manufacturing not only provides a valuable reference for veteran researchers and those entering this exciting field, but also encourages innovation in future additive manufacturing applications.

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## Customer Reviews

"The major strength of the book lies in its comprehensively interdisciplinary approach in dealing with the subject matter. The uniqueness of the book is also associated with the extension of discussion on the social importance of additive manufacturing in education, as well as the current and future implications of additive manufacturing on global engineering. Furthermore, while the contents of the book are formatted in a manner that is highly suitable as a reference material, the book also can be used in classroom settings." –â€œ Professor Narendra Dahotre, University of North Texas, Denton, USA

"Chapter five is a rather comprehensive review of the research literature on additive manufacturing of ceramics." –â€œ John W. Halloran, University of Michigan, Ann Arbor, USA

Amit Bandyopadhyay is Herman and Brita Lindholm Endowed Chair Professor in the School of Mechanical and Materials Engineering at Washington State University (WSU). He received his BS degree in metallurgical engineering from Jadavpur University (Kolkata, India) in 1989, MS degree in metallurgy from the Indian Institute of Science (Bangalore) in 1992, and Ph.D degree in materials science and engineering from the University of Texas at Arlington (USA) in 1995. In 1995, he joined the Center for Ceramic Research at Rutgers University for his postdoctoral training. In 1997, he joined WSU as an assistant professor, and was promoted to an associate level in 2001 and to the full professor level in 2006. His research expertise is focused on additive manufacturing of hard materials toward structural and biomedical applications. He has published more than 250 technical articles. He holds 11 US patents, has edited eight books, and has supervised more than 35 graduate students for their degrees in physics, mechanical engineering, and materials science and engineering. Among others, Professor Bandyopadhyay received the CAREER award from the US National Science Foundation and the Young Investigator Program award from the US Office of Naval Research. Professor Bandyopadhyay is a fellow of the US National Academy of Inventors, the American Ceramic Society, the American Society for Materials, the American Institute for Medical and Biological Engineering, and the American Association for the Advancement of Science. He has been working in the areas of additive manufacturing of advanced materials since 1995.

Susmita Bose is Herman and Brita Lindholm Endowed Chair Professor in the School of Mechanical and Materials Engineering (MME) at Washington State University (WSU). She received her BS degree from Kalyani University (India) in 1990, MS from the Indian Institute of Technology –â€œ Kanpur in 1992, and Ph.D from Rutgers University (New Brunswick, New Jersey, USA) in 1998. In 1998, she joined the MME at WSU as a research assistant scientist in materials science and engineering, and since then she has been working with rapid prototyping/3D

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