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Additive Manufacturing (AM) for Advanced Materials and Structures

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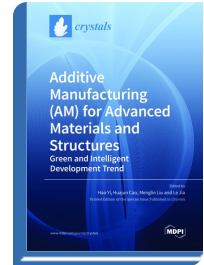
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Additive manufacturing (AM), as an advanced manufacturing technology, has overturned the traditional concept of subtractive manufacturing. It has revolutionized advanced integrated structural design, high-performance material preparation, and the manufacturing of complex components. AM technology is changing the way products are developed, produced, and commercialized, leading to disruptive changes in the economy and society. AM technology has received extensive attention and research from the research community since its inception, and it is leading manufacturing technology and continues to be used with great effectiveness in the aerospace industry, automotive industry, medical plant applications, and many other fields. However, the development of additive manufacturing still faces demanding technical challenges; for example, due to insufficient process planning and inadequate process control, many defects are often observed in the products of AM processes, reducing production efficiency and deteriorating product quality. To promote AM technology toward high efficiency, high precision, high performance, and low cost in a green and intelligent direction, many advanced design and manufacturing technologies are in urgent need of further breakthroughs, such as numerical and analytical models for structural design, experimental methods, performance prediction, and process optimization.



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