
SOLID FREEFORM FABRICATION: A New Direction in Manufacturing

Solid Freeform Fabrication: A New Direction in Manufacturing

*with
Research and Applications in Thermal
Laser Processing*

by

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PREFACE

Solid Freeform Fabrication is a set of manufacturing processes that are capable of producing complex freeform solid objects directly from a computer model of an object without part-specific tooling or knowledge. In essence, these methods are miniature manufacturing plants which come complete with material handling, information processing and materials processing. As such, these methods require technical knowledge from many disciplines; therefore, researchers, engineers, and students in Mechanical, Chemical, Electrical, and Manufacturing Engineering and Materials and Computer Science will all find some interest in this subject. Particular subareas of concern include manufacturing methods, polymer chemistry, computational geometry, control, heat transfer, metallurgy, ceramics, optics, and fluid mechanics. History of technology specialists may also find Chapter 1 of interest.

Although this book covers the spectrum of different processes, the emphasis is clearly on the area in which the authors have the most experience, *thermal laser processing*. In particular, the authors have all been developers and inventors of techniques for the Selective Laser Sintering process and laser gas phase techniques (Selective Area Laser Deposition).

This is a research book on the subject of Solid Freeform Fabrication. Although there are now several commercial entities producing and marketing Solid Freeform Fabrication systems, there is no attempt in this book to compare or contrast these systems. I believe any such comparison is premature in this rapidly changing field. But, rather, the authors have described in detail the basic freeform fabrication techniques and the engineering fundamentals on which they depend. I wish to recommend future *Solid Freeform Fabrication Symposia Proceedings* for updates to the technical information presented in this work.

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