

Contents

1	Introduction	1
	Rolf Wester	
2	The Behavior of Electromagnetic Radiation at Interfaces	5
	Rolf Wester	
3	Absorption of Laser Radiation	15
	Rolf Wester	
4	Energy Transport and Heat Conduction	43
	Rolf Wester	
5	Thermomechanics	63
	Rolf Wester	
6	Phase Transformations	69
	Rolf Wester	
7	Melt Flow	77
	Rolf Wester	
8	Laser-Induced Vaporization	93
	Rolf Wester	
9	Plasma Physics	113
	Rolf Wester	
10	Laser Beam Sources	155
	Torsten Mans and Konstantin Boucke	

11	Surface Treatment	173
	Konrad Wissenbach, Andreas Weisheit, Edgar Willenborg, Andre Temmler, Andreas Weisheit, Gerhard Backes, Andres Gasser, and Jens Gottmann	
12	Forming	241
	Alexander Olowinsky	
13	Rapid Prototyping and Rapid Tooling	253
	Christoph Over and Wilhelm Meiners	
14	Joining	265
	Norbert Wolf, Dirk Petring, A.L. Boglea, Andreas Roesner, Ulrich Andreas Russek, Fahri Sari, Luedger Bosse, Felix Schmitt, Kilian Klages, and Alexander Olowinsky	
15	Ablation	343
	Arnold Gillner, Alexander Horn, and Carsten Johnigk	
16	Drilling	365
	Kurt Walther, Mihael Brajdic, and Welf Wawers	
17	Cutting	395
	B. Seme, Frank Schneider, and Arnold Gillner	
18	System Technology	427
	Kerstin Kowalick, Stefan Kaierle, Boris Regaard, and Oliver Steffens	
19	Laser Measurement Technology	473
	André Lamott, Reinhard Noll, Csaba Farkas, Christoph Janzen, Tilman Schwendt, Tobias Kuhlen, and Ümit Aydin	
A	Optics	537
B	Continuum Mechanics	547
C	Laser-Induced Vaporization	575
D	Plasma Physics	579

E	Glossary of Symbols and Constants	585
F	Übersetzung der Bildbeschriftungen	595
Index		603