



# Principles of Laser Materials Processing

By Elijah Kannatey-Asibu Jr.

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**Principles of Laser Materials Processing** By Elijah Kannatey-Asibu Jr.

Coverage of the most recent advancements and applications in laser materials processing

This book provides state-of-the-art coverage of the field of laser materials processing, from fundamentals to applications to the latest research topics. The content is divided into three succinct parts:

- Principles of laser engineering—an introduction to the basic concepts and characteristics of lasers, design of their components, and beam delivery
- Engineering background&-a review of engineering concepts needed to analyze different processes: thermal analysis and fluid flow; solidification of molten metal; and residual stresses that evolve during processes
- Laser materials processing-a rigorous and detailed treatment of laser materials processing and its principle applications, including laser cutting and drilling, welding, surface modification, laser forming, and rapid prototyping

Each chapter includes an outline, summary, and example sets to help readers reinforce their understanding of the material. This book is designed to prepare graduate students who will be entering industry; researchers interested in initiating a research program; and practicing engineers who need to stay abreast of the latest developments in this rapidly evolving field.

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## Principles of Laser Materials Processing By Elijah Kannatey-Asibu Jr. Bibliography

- Sales Rank: #1590962 in Books
- Published on: 2009-04-20
- Original language: English
- Number of items: 1
- Dimensions: 9.50" h x 1.70" w x 6.40" l, 2.65 pounds
- Binding: Hardcover
- 819 pages

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Principles of Laser Materials Processing

Elijah Kannatey-Asibu Jr.

From the Back Cover

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## **About the Author**

Elijah Kannatey-Asibu Jr., PhD, received his BSc from the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana, in 1974 and his PhD from the University of California at Berkeley in 1980. He has been with the Mechanical Engineering Department at the University of Michigan in Ann Arbor since 1983. Dr. Kannatey-Asibu's research focuses on multisensor monitoring of manufacturing processes, multiple-beam laser processing, acoustic emission investigation of manufacturing processes, and microfabrication using femtosecond lasers. He is a Fellow of the Society of Manufacturing Engineers and of the American Society of Mechanical Engineers.

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