

# Table of Contents

Preface .....V

## Section I

Plasma Assisted Surface Modification Techniques  
and Synthesis of Novel Materials .....3  
*K. Upadhya*

Solid Freeform Fabrication Using Selective Area Laser Deposition .....23  
*G. Zong, Y. Jacquot, W. R. Thissell and H. L. Marcus*

The Impact of the High Power Laser on Solidification  
and Alloy Development .....49  
*J. A. Sekhar*

Electronic/Photonic Applications of Diamond .....81  
*R. Koba*

Laser Growth of Diamond Thin Films .....93  
*P. A. Molian and B. C. Janvrin*

## Section II

Laser Processing of Materials and Deposition of Thin Films ..... 109  
*J. Narayan*

Dispersion Strengthening of NB-Base Alloys  
During Low Pressure Plasma Spray Processing ..... 113  
*Z. Z. Mutasim and R. W. Smith*

Synthesis of Ultrafine Silicon Carbide  
In a Non-Transferred Arc Thermal Plasma Reactor ..... 123  
*P. R. Taylor and S. A. Pizada*

Surface Modification of Materials by Plasma Source Ion Implantation ..... 141  
*J. R. Conrad, A. Chen, R. A. Dodd, J. T. Scheuer,  
K. Sridharan and F. J. Worzala*

A Comparison of PSII Nitrogen and Carbon Implanted T15 Tool Steel  
for Wear Resistance in Wood Machining Applications ..... 151  
*S. Raebel, F. J. Worzala and J. R. Conrad*

## Section III

Comparison of Techniques for Deposition of Carbon Thin Films ..... 165  
*J. J. Cuomo, D. L. Pappas, J. P. Doyle, J. Bruley and K. L. Saenger*

Morphology and Performance of Plasma Assisted Physical Vapor Deposited TiC Hard Coatings .....	175
<i>K. Upadhy</i>	
Plasma Processing of Materials: Process Metallurgy to Diamond Coatings .....	187
<i>J. J. Moore</i>	
Behaviors of Plasma Enhanced CVD Deposited TiN On Low Carbon Steel .....	211
<i>J.-L. He, M.-H. Hon, H.-S. Chung and Y. Shueh</i>	
Surface Modification with Low-Energy Plasmas .....	225
<i>O. T. Inal and E. S. Metin</i>	
Plasma Assisted Physical Vapor Deposition (PAPVD) of TiN and Applications .....	235
<i>K. Moriyama</i>	

#### **Section IV**

Baubles, Bangles and Beads From Plasma Assisted Vapor Deposition Processes .....	257
<i>R. F. Bunshah</i>	
Ion-Assisted Physical Vapor Deposition: Processes and Materials .....	273
<i>J. M. Rigsbee</i>	
Plasma Surface Hardening of Titanium Alloys .....	285
<i>E. S. Metin and O. T. Inal</i>	
Plasma-Assisted Physical Vapor Deposition Surface Treatments for Tribological Control .....	299
<i>T. Spalvins</i>	
Uses of Ion Bombardment In Thin-Film Deposition .....	315
<i>R. A. Erck, G. R. Fenske and A. Erdemir</i>	
Laser-Target-Plasma Interactions and Pulsed Laser Deposition of Thin Films .....	331
<i>R. K. Singh and J. Narayan</i>	
An Investigation of Thin Film Growth During Laser Chemical Vapor Deposition .....	349
<i>J. Mazumder, M. N. Azer and A. Kar</i>	
Corrosion Resistance of Plasma Sprayed and Laser Glazed Ceramic Coatings .....	375
<i>B. A. Nagaraj, A. F. Maricocchi, E. Whitney, and D. J. Wortman</i>	