

CONTENTS

<b>Preface</b>	<b>ix</b>
<b>Chapter 1. General Introduction to Ceramic Materials</b>	<b>1.1</b>
1.1. Introduction / 1.1	
1.2. Ceramics and Metals / 1.2	
1.3. Traditional and Advanced Ceramics / 1.8	
1.4. Generic Properties / 1.15	
1.5. Market Potential / 1.17	
1.6. Education and Ceramic Technology / 1.19	
References / 1.20	
Bibliography / 1.22	
<b>Chapter 2. Mechanical Properties of Ceramics</b>	<b>2.1</b>
2.1. Introduction / 2.1	
2.2. Ceramics Contrasted to Metals / 2.1	
2.3. Strength and Fracture Considerations / 2.4	
2.4. Ceramic Substitution-Design Considerations / 2.16	
2.5. Surface Effects / 2.24	
2.6. Composite Design Considerations / 2.26	
2.7. Nondestructive Evaluation / 2.29	
2.8. Conclusions / 2.30	
References / 2.30	
Bibliography / 2.33	
<b>Chapter 3. Commercial Structural Ceramics</b>	<b>3.1</b>
3.1. Introduction / 3.1	
3.2. Mechanical Testing of Ceramics / 3.3	
3.3. Standardization of Ceramics / 3.6	
3.4. Existing Handbooks, Databases, and Compilations / 3.8	
3.5. Commercial Structural Ceramics / 3.10	
3.6. Conclusions / 3.36	
References / 3.39	
Bibliography / 3.44	

<b>Chapter 4. Powders-Forming, Processing, and Densification</b>	<b>4.1</b>
4.1. Introduction / 4.1	
4.2. Ceramic Powders and Their Processes / 4.5	
4.3. Powders and Processing / 4.12	
4.4. Powders (Materials) / 4.41	
4.5. Reinforcements for Ceramics / 4.52	
4.6. Whiskers, Short Fibers, and Particulates / 4.60	
References / 4.77	
Bibliography / 4.87	
<b>Chapter 5. Greenware Fabrication</b>	<b>5.1</b>
5.1. Introduction / 5.1	
5.2. Ceramic Processes / 5.2	
5.3. Particle Packing / 5.6	
5.4. Rheology / 5.6	
5.5. Granulation / 5.6	
5.6. Forming Processes / 5.7	
5.7. Methods and Materials / 5.25	
References / 5.51	
Bibliography / 5.55	
<b>Chapter 6. High-Temperature Processing and Consolidation</b>	<b>6.1</b>
6.1. Introduction / 6.1	
6.2. Basics of High-Temperature Consolidation / 6.2	
6.3. Hot Pressing / 6.8	
6.4. Pressureless Sintering / 6.10	
6.5. Reaction Sintering / 6.13	
6.6. Overpressure Sintering / 6.16	
6.7. Hot Isostatic Pressing / 6.17	
6.8. Novel Methods / 6.26	
6.9. Other Processing Parameters / 6.36	
6.10. Conclusions / 6.37	
References / 6.37	
Bibliography / 6.42	
<b>Chapter 7. Fabrication and Manufacturing Methods</b>	<b>7.1</b>
7.1. Introduction / 7.1	
7.2. Manufacturing Methods / 7.1	
7.3. Machining with Ceramic Cutters / 7.38	
7.4. Joining of Structural Ceramics /	7.48
7.5. Coatings / 7.84	
References / 7.94	
Bibliography / 7.105	

<b>Chapter 8. Applications for Ceramic Materials and Processes</b>	<b>8.1</b>
8.1. Introduction / 8.1	
8.2. Ceramics by Function and Material / 8.1	
8.3. Prognostication of Ceramic Applications / 8.5	
8.4. Markets for Structural Ceramics / 8.7	
8.5. Nondestructive Evaluation / 8.76	
References / 8.81	
Bibliography / 8.88	
<b>Chapter 9. The Future of Ceramics</b>	<b>9.1</b>
9.1. Introduction / 9.1	
9.2. Ceramics and Processes / 9.1	
9.3. Fabrication Processes / 9.10	
9.4. Nondestructive and Destructive Testing / 9.13	
9.5. Ceramic Applications / 9.14	
9.6. New Ceramic and Metal Materials / 9.17	
9.7. Reliability and Design / 9.38	
9.8. Future Trends / 9.40	
References / 9.41	
Bibliography / 9.48	
<b>Index</b>	<b>1.1</b>