
Table of contents

Chapter 1 Introduction	1
1.1 Historical Background	1
1.2 Grammar: Simple Past versus Present Perfect	3
1.3 Materials Science versus Materials Engineering	5
1.4 Selection of Materials	6
1.5 Some Phrases for Academic Presentations	7
1.6 Case Study: The Turbofan Aero Engine	8
1.7 Some Abbreviations for Academic Purposes	10
Chapter 2 Characteristics of Materials	12
2.1 Structure	12
2.2 Some Phrases for Academic Writing	13
2.3 Case Study: The Gecko	15
2.4 Property	16
2.5 Some Phrases for Describing Figures, Diagrams and for Reading Formulas	19
2.6 Grammar: Comparison	20
2.7 Processing and Performance	21
2.8 Classification of Materials	23
2.9 Grammar: Verbs, Adjectives, and Nouns followed by Prepositions	24
Chapter 3 Metals	25
3.1 Introduction	25
3.2 Mechanical Properties of Metals	27
3.3 Important Properties for Manufacturing	29
3.4 Metal Alloys	30
3.5 Case Study: Euro Coins	32
3.6 Grammar: Adverbs I	34
3.7 Case Study: The Titanic	35
3.8 Grammar: The Passive Voice	36
3.9 Case Study: The Steel-Making Process	38
Chapter 4 Ceramics	40
4.1 Introduction	40
4.2 Structure of Ceramics	41
4.3 Word Formation: Suffixes in Verbs, Nouns and Adjectives	41
4.4 Properties of Ceramics	43
4.5 Case Study: Optical Fibers versus Copper Cables	44
4.6 Grammar: Adverbs II	46
4.7 Case Study: Pyrocerams	46
4.8 Case Study: Spheres Transporting Vaccines	48
4.9 Useful Expressions for Shapes and Solids	49

Chapter 5 Polymers	51
5.1 Introduction	51
5.2 Word Formation: The Suffix -able/-ible	52
5.3 Properties of Polymers	53
5.4 Case Study: Common Objects Made of Polymers	54
5.5 Case Study: Ubiquitous Plastics	55
5.6 Grammar: Reported Speech (Indirect Speech)	57
5.7 Polymer Processing	59
5.8 Case Study: Different Containers for Carbonated Beverages	61
Chapter 6 Composites	63
6.1 Introduction	63
6.2 Case Study: Snow Ski	64
6.3 Grammar: Gerund (-ing Form)	66
6.4 Case Study: Carbon Fiber Reinforced Polymer (CFRP)	69
6.5 Word Formation: Prefixes	70
Chapter 7 Advanced Materials	73
7.1 Introduction	73
7.2 Semiconductors	75
7.3 Case Study: Integrated Circuits	76
7.4 Grammar: Subordinate Clauses	77
7.5 Smart Materials	78
7.6 Nanotechnology	80
7.7 Case Study: Carbon Nanotubes	80
7.8 Grammar: Modal Auxiliaries	82
KEY	84
Credits/Selected Reference List	104
Glossary	106