

<<炭材料科学与工程>>

图书基本信息

书名 : <<炭材料科学与工程>>

13位ISBN编号 : 9787302133018

10位ISBN编号 : 7302133018

出版时间 : 2006-7

出版时间 : 清华大学

作者 : 稻垣道夫

字数 : 910000

版权说明 : 本站所提供之下载的PDF图书仅提供预览和简介,请支持正版图书。

更多资源请访问 : <http://www.tushu007.com>

<<炭材料科学与工程>>

内容概要

近年来由于富勒烯和碳纳米管的发现，炭材料研究受到了全球材料科学界、物理界和化学界的广泛关注。

该书系统地介绍了炭材料的科学理论知识和工程应用实例。

第一部分为绪论，介绍了写作本书的目的和炭材料的分类与发展史，以及炭的多样性。

第二部分为炭材料的基础科学知识，主要介绍了炭材料的结构、性能和制备工艺，特别是炭化和石墨化的原理及其微观结构控制技术，多孔炭的孔径控制和炭材料掺杂其他原子的技术，炭材料的各类表征方法。

第三部分主要为炭素材料的工程与应用问题，特别是新型炭材料的发展及其在能源、环保、原子能、国防方面的应用实例，涉及石墨电极，高密度各向同性石墨，高取向热解石墨，玻璃炭，纤维状炭，多孔炭，石墨层间化合物等。

<<炭材料科学与工程>>

书籍目录

1 Introduction 1.1 Carbon Materials 1.2 Short History of Carbon Materials References 1.3 Classic Carbons, New Carbons and Nanocarbons 1.3.1 Classic carbons 1.3.2 New carbons 1.3.3 Nanocarbons References 16
1.4 Construction and Purposes of the Present Book 2 Fundamentals of Carbon Materials 2.1 Carbon Families
2.1.1 Carbon-carbon bonds 2.1.2 Carbon families 2.1.3 Relations to neighboring atoms 2.2 Structure and
Texture of Carbon Materials 2.2.1 Structure 2.2.2 Structural development with heat treatment (Carbonization
and graphitization) 2.2.3 Nanotexture 2.2.4 Microtexture (Agglomeration) References 2.3 Nanotexture
Development in Carbon Materials (Carbonization) 2.3.1 Formation processes of carbon materials 2.3.2 Gas
phase carbonization 2.3.3 Solid phase carbonization 2.3.4 Liquid phase carbonization References 2.4 Novel
Techniques for Carbonization 2.4.1 Template method 2.4.2 Polymer blend method 2.4.3 Pressure
carbonization 2.4.4 High yield carbonization 2.4.5 Low temperature carbonization References 2.5 Structural
Development in Carbon Materials (Graphitization) 2.5.1 Structure parameters 2.5.2 Graphitization behavior
2.5.3 Carbon materials with planar orientation 2.5.4 Carbon materials with axial orientation 2.5.5 Carbon
materials with point orientation 2.5.6 Carbon materials with random orientation 2.5.7 Relations among
structure parameters 2.5.8 Graphitization process 2.5.9 Graphitizing and non-graphitizing carbons 2.5.10
Heterogeneous graphitization (Multiphase graphitization) References 2.6 Acceleration of Graphitization 2.6.1
Catalytic graphitization 2.6.2 Stress graphitization 2.6.3 Graphitization of exfoliated carbon fibers References
2.7 Pore Development in Carbon Materials 2.7.1 Pores in carbon materials 2.7.2 Identification of pores in
carbon materials 2.7.3 Pore development in carbon materials References 2.8 Introduction of Foreign Species
2.8.1 Possibility to introduce foreign species into carbon materials 226 2.8.2 Intercalation 2.8.3 Substitution
2.8.4 Doping 2.8.5 Dispersion of fine metal particles References 3 Engineering and Applications of Carbon
Materials 3.1 Polycrystalline Graphite Blocks 3.1.1 Production 3.1.2 Applications 3.1.3 Filler cokes and binder
pitches 3.1.4 Properties References 3.2 Highly-oriented Graphite 3.2.1 Highly-oriented graphite 3.2.2 Kish
graphite 308 3.2.3 Highly-oriented pyrolytic graphite (HOPG) 3.2.4 Graphite films derived from polyimide
films 3.2.5 Flexible graphite sheets References 3.3 Non-graphitizing and Glass-like Carbons 3.3.1 Structural
characteristics 3.3.2 Properties 3.3.3 Glass-like carbons References 3.4 Fibrous Carbons 3.4.1 Classification
of fibrous carbons 3.4.2 Carbon fibers 3.4.3 Carbon nanotubes and nanofibers 3.4.4 Single wall carbon
nanohorns 3.4.5 Carbon microcoils References 3.5 Porous Carbons 3.5.1 Activated carbons 3.5.2 Novel
techniques to control pore structure 3.5.3 Exfoliated graphite References 3.6 Carbon-based Composites 3.6.1
Carbon-based composites 3.6.2 Carbon/carbon composites (C/Cs) 3.6.3 Carbon fiber reinforced plastics
3.6.4 Carbon/ceramics composites 3.6.5 Carbon/metal composites References 3.7 Intercalation Compounds
3.7.1 Possible applications 3.7.2 High conductivity function 3.7.3 Electrochemical functions 3.7.4 Catalytic
functions 3.7.5 Gas adsorption and storage 3.7.6 Other functions References 3.8 Carbon Materials for
Energy Storage 3.8.1 Rechargeable batteries 3.8.2 Electrochemical capacitors 3.8.3 Storage of hydrogen gas
3.8.4 Storage of methane gas 3.8.5 Applications to other batteries References 3.9 Carbon Materials for
Environment Remediation 3.9.1 Carbon/anatase composites 3.9.2 Carbon materials for sorption of viscous
fluids 3.9.3 Carbon fibers References Acknowledgements Subject Indexes

<<炭材料科学与工程>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>