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pore structure analysis,  
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*their background and  
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*carbon materials Authored by experts who are considered specialists in their respective techniques Presents practical results on various carbon materials, including fault results, which will help readers*

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*with ever more specific functional properties. As a result, there has been a wealth of research on how those properties emerge during steelmaking. Fundamentals of metallurgy summarises this*



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*research and its implications  
for manufacturers. The first  
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range of chapters on such  
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*transformations, types of kinetic reaction, transport and interfacial phenomena. Authors discuss how these processes and the resulting properties of metals can be modelled and predicted. Part two discusses*

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*that are subject to intense radiation fields. Radiation causes metals and alloys to swell, distort, blister, harden, soften and deform. This textbook and reference covers the basics of particle-atom*

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*interaction for a range of  
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*diffusion, numerous examples of  
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treatment of in-cascade defect  
clustering, cluster evolution, and  
cluster mobility, new discussion of  
void behavior near grain*

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*boundaries, a new section on ion beam assisted deposition, and reorganization of hardening, creep and fracture of irradiated materials (Chaps 12-14) to provide a smoother and more integrated transition between the topics. The*

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*crevice corrosion, and stress corrosion cracking. Chapter 16 extends this treatment and considers the effects of irradiation on corrosion and environmentally assisted corrosion, including the effects of irradiation on water*



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*elements of materials and their properties. The relationships among processing, structure, properties, and performance components for steels, glass-ceramics, polymer fibers, and silicon semiconductors are*

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explored throughout the  
chapters. The discussion of the  
construction of crystallographic  
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*science, distinguishing it from  
merely solid state physics and  
solid state chemistry, namely to  
develop models that provide the  
relation between the  
microstructure and the  
properties. The book is meant*



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*to be used in the beginning of a materials science and engineering study as well as throughout an entire undergraduate and even graduate study as a solid background against which*

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*specialized texts can be  
studied. Topics dealt with are  
"crystallography", "lattice  
defects", "microstructural  
analysis", "phase equilibria and  
transformations" and  
"mechanical strength". After*

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*the basic chapters the coverage of topics occurs to an extent surpassing what can be offered in a freshman's course. About the author Prof. Mittemeijer is one of the top scientists in materials science, whose*

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*drawings, aid developing a firm appreciation of this complex topic. Hard-to-grasp terms such as "textures" are lucidly explained - not only the phenomenon itself, but also its consequences for the material*



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*organization of topics.*

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structure, characteristic,  
or property type at a time  
is discussed for all three  
basic material types --  
metals, ceramics, and*

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*polymeric materials. This  
order of presentation  
allows for the early  
introduction of non-metals  
and supports the  
engineer's role in  
choosing materials based*

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*upon their*

*characteristics. Also*

*discussed are new, cutting-*

*edge materials. Using*

*clear, concise terminology*

*that is familiar to*

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*presents material at an  
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Engineering takes an  
integrated approach in  
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structure, characteristic,*

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*or property type is covered in turn for all three basic material types: metals, ceramics, and polymeric materials. This presentation permits the early introduction of*

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*non-metals and supports  
the engineer's role in  
choosing materials based  
upon their  
characteristics. Using  
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*students, this program  
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expertise and insights on  
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that have made it from the laboratory test beds into the real world of powder diffraction. This prompted a revision, which had to be beyond cosmetic limits. The book was, and remains focused on standard laboratory powder diffractometry. It is still meant to be used as a text for teaching students about the capabilities and



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limitations of the powder diffraction method. We also hope that it goes beyond a simple text, and therefore, is useful as a reference to practitioners of the technique. The original book had seven long chapters that may have made its use as a text - convenient. So the second edition is broken down into 25 shorter chapters. The first

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