

<<Hydrogenated Amorpho>>

图书基本信息

书名：<<Hydrogenated Amorphous Silicon氢化非晶硅>>

13位ISBN编号：9780521019347

10位ISBN编号：0521019346

出版时间：2005-9

作者：Street, R.A.

页数：417

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>

<<Hydrogenated Amorpho>>

内容概要

Divided roughly into two parts, the book describes the physical properties and device applications of hydrogenated amorphous silicon. The first section is concerned with the atomic and electronic structure, and covers growth defects and doping and defect reactions. The emphasis is on the optical and electronic properties that result from the disordered structure. The second part of the book describes electronic conduction, recombination, interfaces, and multilayers. The special attribute of a-Si:H which makes it useful is the ability to deposit the material inexpensively over large areas, while retaining good semiconducting properties, and the final chapter discusses various applications and devices.

<<Hydrogenated Amorpho>>

书籍目录

Preface1 Introduction 1.1 Early research 1.2 Basic concepts of amorphous semiconductors 1.2.1 Atomic structure 1.2.2 Chemical bonding, the 8-N rule and defect reactions 1.2.3 Electronic structure 1.2.4 Electronic properties 1.2.5 Localization, the mobility edge and conduction2 Growth and structure of amorphous silicon 2.1 Growth of a-Si: H 2.1.1 The morphology of film growth 2.1.2 Growth mechanisms 2.2 The silicon bonding structure 2.2.1 Silicon-silicon atomic bonding 2.2.2 Intermediate range order, network voids and stress 2.2.3 Network vibrations 2.3 The hydrogen bonding structure 2.3.1 Silicon-hydrogen bonds 2.3.2 The hydrogen local order 2.3.3 Hydrogen diffusion, evolution and rehydrogenation 2.3.4 The role of hydrogen in the growth of a-Si : H 2.3.5 Hydrogen in amorphous and crystalline silicon3 The electronic density of states 3.1 The conduction and valence bands 3.1.1 Measurements of the conduction and valence band density of states 3.2 The band tails 3.2.1 Dispersive trapping in a band tail 3.2.2 The band tail density of states distribution 3.3 Optical band.t0.band transitions 3.3.1 The Urbach edge 3.3.2 Thermal and static disorder4 Defects and their electronic states 4.1 Defects in amorphous semiconductors 4.1.1 Lattice relaxation at defects 4.1.2 Correlation energies 4.1.3 Valence alternation pairs—the example of selenium 4.2 Experimental measurements of defects 4.2.1 Electron spin resonance(ESR) 4.2.2 ESR hyperfine interactions 4.2.3 Defect level spectroscopy—thermal emission energies 4.2.4 Defect level spectroscopy—optical transition energms 4.2.5 Summary 4.3 Defect Models5 Substitutional doping 5.1 Growth and structure of doped a.Si : H 5.2 The electronic effects of doping 5.2.1 Defects induced by doping 5.2.2 Shallow electronic states 5.2.3 The doping efficiency 5.2.4 Compensated a.Si : H 5.3 The doping mechanism 5.3.1 Discussion of the doping model6 Defect reactions , thermal equilibrium and metastability 6.1 Evidence of structural equilibration 6.2 Thermal equilibrium models 6.2.1 Theory of chemical equilibrium 6.2.2 DefeCt and dopant equilibrium with discrete formation energies 6.2.3 Distributions of formation energies—the weak bond model 6.2.4 The role of the band tails and deposition conditions7 Electronic transport8 The recombination of excess carriers9 Contacts,interfaces and multilayers10 Amorphous silicon device technologyReferencesIndex

<<Hydrogenated Amorpho>>

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>