

# Table of Contents

## Preface

### Epitome

N.J. Kreidl 1

### Modes of Formation of Amorphous Solids: An Overview

D. Turnbull 9

### Surface Structure of Silicate Glasses - Atomic Level Descriptions

S.H. Garofalini 21

### A Language for the Study of Network Silica Glasses

C.S. Marians and L.W. Hobbs 31

### The Liquid-Glass Transition

R.L. Jacobs and P.P. Rice 37

### Comparison of A-Si: H from Plasma Deposition and Chemical Vapour Deposition

Z.S. Ding and G.R. Han 43

### Near Ultraviolet-Visible-Near Infrared Optical Behavior of Sputter Deposited GeO<sub>x</sub>

C.R. Aita, M.E. Marhic and C.N. Sayers 55

### Energetics of Metastable Forms of Amorphous Silica

A. Navrotsky 61

### Optical Properties of Nitrided Sodium Metaphosphate Glass

M. Heuberger and L.D. Pye 67

### New Modes of Glass Formation Using Negative Pressure Quenching and Superstructuring Principles

C.A. Angell, J. Green, D. List, Z. Qing and H. Senapat 77

### Luminescence Centres in VAD SiO<sub>2</sub>:GeO<sub>2</sub> Glasses Sintered under Reducing or Oxidizing Conditions

K. Muta, A. Kashiwazaki and H. Kawazoe 93

### A Magic Angle Spinning NMR Study of the Structure of Vitreous Silica Prepared in Different Ways

R.S. Aujla, R. Dupree, I. Farnan and D. Holland 99

### X-Ray Diffraction Study of the Structure of Deposited Wo<sub>3</sub> Films

T. Nanba and I. Yasui 105

### Thermally Stimulated Depolarization Current in Porous Glass

E. Rysiakiewicz-Pasek, B. Macalik and E. Pawlik 111

### Effects of Liquid Equilibration Temperature T<sub>phi</sub> on the Properties of Germania Glass: A Review

R.A. Weeks and D.L. Kinser 117

### Luminescence Centers in VAD SiO<sub>2</sub> Glasses Sintered Under Reducing or Oxidizing Atmospheres

M. Kohketsu, H. Kawazoe and M. Yamane 127

### Phonon-Assisted Energy Transfer in Sol-Gel and Melt Glasses

G.S. Dixon 133

### Effects of Melting Atmosphere and Heat Treatment on the Photosensitivity of Dopant-Free Ultraviolet-Sensitive Calcium Aluminate Glasses

H. Hosono and Y. Abe 139

### The Interaction of Water Vapor with a Borosilicate Melt

H.D. Schreiber, C.W. Schreiber and S.J. Kozak 145

### Photostructural Effects in Chalcogenide Glasses Using EXAFS and SAS

G.N. Greaves, S.R. Elliott, L.F. Gladden and C.A. Spence 155

### Structural Ordering As<sub>2</sub>S<sub>3</sub> Bulk Glass: Role of Quench Temperature

I. Zitkovsky and P. Boolchand 167

### Ordering Phenomena in Silica Glasses Studied by Positron Annihilation

G. Brauer and G. Boden 173

### Nonlinear Optical Effects in Organically Doped Low Melting Glasses

P.A. Tick and D.W. Hall 179

<b>Defects in Chalcogenide Melts and Glasses</b>	189
H. Kawazoe, Y. Watanabe and M. Yamane	
<b>The Effect of the Cooling Rate on Electrochemical Surface and Bulk Properties of Some Lithium Silicate Glasses</b>	
F.G.K. Baucke	197
<b>Radiation-Induced Optical Absorption in Amorphous Silicas Prepared by Different Techniques</b>	
E.J. Friebele, P.L. Higby and T.E. Tsai	203
<b>Influence of Processing Parameters on the Defect Structures of Gel-Derived Silicas</b>	
D.L. Griscom and C.J. Brinker	213
<b>Microstructure and Its Role in Controlling Photo-Induced Changes in Amorphous Chalcogenide Films</b>	
C.A. Spence and S.R. Elliott	227
<b>Characterization of Atomic-Scale Structures of Amorphous Ceramics and Metals Depending on Different Preparation Methods</b>	
K. Suzuki	233
<b>X-Ray Synchrotron Radiation Structural Studies of Amorphous Materials</b>	
A. Bienenstock, S. Brennan, A. Fischer-Colbrie, P.H. Fuoss, K.F. Ludwig, R.D. Lorentz, W.K. Warburton and L. Wilson	245
<b>Diffraction by Glasses With a Layer Structure</b>	
A.C. Wright, D.L. Price, A.G. Clare, G. Etherington and R. Sinclair	255
<b>The Effect of Preparation Methods on the Coordination of Cations in Glass</b>	
N. Soga and T. Hanada	265
<b>Thermal Effects on Density of Alkali Borate Glasses</b>	
H.C. Lim and S.A. Feller	277
<b>Structural Evolution of Alumino-Silicate Gel-Glass during Heat Treatment</b>	
A. Yasumori, M. Iwasaki, H. Kawazoe, M. Yamane and Y. Nakamura	283
<b>Lithium Ion Conducting Glasses in the System: LiCl-Li<sub>2</sub>O-P<sub>2</sub>O<sub>5</sub>-SiO<sub>2</sub></b>	
P.P. Tsai and M. Greenblatt	293
<b>Stabilisation of the Glass Structure by Trivalent Cations</b>	
K. Fröberg and K.H. Karlsson	299
<b>Structural Models for Amorphous SiO<sub>2</sub></b>	
F.L. Galeener	305
<b>Structural Nature of the Amorphous-to-Crystalline Transition in Phosphate Glasses as Studied by Liquid Chromatography</b>	
B.C. Sales, J.O. Ramey and L.A. Boatner	315
<b>Oxidation States of Glass Melts</b>	
R. Kohl and H.A. Schaeffer	325
<b>Redox Behavior of Glass Melts</b>	
A. Lenhart and H.A. Schaeffer	335
<b>Solubility and Diffusion of Gases in a Reference Borosilicate Melt</b>	
H.D. Schreiber, C.W. Schreiber, P.G. Leonhard, K.K. McManus and B.D. Trandel	345
<b>Nonstoichiometry in Chemically Polymerized Glass Networks</b>	
B.E. Yoldas	351
<b>Glasses From Sonogels</b>	
N. de la Rosa-Fox, L.M. Esquivias Fedriani and J. Zarzycki	363
<b>Fractal Dynamic of Silica Gels: Low Frequency Raman Scattering Experiments</b>	
B. Champagnon, E. Duval, A. Boukenter, J. Serughetti and J. Dumas	375
<b>Vibrational Spectra and Structure of Silicophosphate Gels, Glasses, and Crystals</b>	
J.B. Perison and W.B. White	381
<b>Different Ways to Incorporate Nitrogen in Li<sub>2</sub>O-B<sub>2</sub>O<sub>3</sub> Glasses</b>	
W. Beier, G. Krüner and G.H. Frischat	387
<b>Electrical Polarization in Lithium Aluminosilicate Glasses</b>	
B. Dutta and D.E. Day	393
<b>Chemical Order of SiSe<sub>2</sub> Glass and Crystal Compared</b>	
R.N. Enzweiler, P. Boolchand and J.E. Griffiths	403

<b>Structural, Electrical and Spectroscopic Studies of Oxidic Spinel System ZnFeCrO<sub>4</sub> and NiFeCrO<sub>4</sub></b> M.N. Khan, S. Al-Dallal and A. Ahmed	409
<b>Structural Ordering of Evaporated Amorphous Chalcogenide Alloy Films: Role of Thermal Annealing</b> P. Boolchand, R.N. Enzweiler and M. Tenhover	415
<b>The Effect of Modes of Formation on Borate Glasses Containing Titanium Impurities</b> S. Arafa, S. Imam and M. Nasrallah	421
<b>SAXS Measurements on Aerogels</b> M.A. Aegerter, D.I. dos Santos, A.F. Craievich, T. Lours and J. Zarzycki	427
<b>Structure and Ionic Conductivity of Gels in the Li<sub>2</sub>O-P<sub>2</sub>O<sub>5</sub>-SiO<sub>2</sub> System</b> E.A. Hayri and M. Greenblatt	433
<b>Correction Method for the X-Ray Diffraction Data Obtained by Thin Film Diffractometer</b> I. Yasui and T. Nanba	439
<b>The Role of Fe<sub>2</sub>O<sub>3</sub> in the Crystal Growth of Beta-Quartz Solid Solution</b> M.L. Wang, J.F. Han, R. Stevens and P. Knott	445
<b>Low-Temperature Anomalies in Glasses and the Related Study of Electron and Neutron Irradiated Quartz</b> C. Laermans	451
<b>Luminescence Induced by Ion Deposition in Synthetic SiO<sub>2</sub> Glasses</b> P.W. Wang, R.F. Haglund, D.L. Kinser, H.C. Mogul, N.H. Tolk and R.A. Weeks	463
<b>On the Structure of Ge-Associated Defect Centers in Irradiated High Purity GeO<sub>2</sub> and Ge-Doped SiO<sub>2</sub> Glasses</b> T.E. Tsai, D.L. Griscom and E.J. Friebele	469
<b>Radiation Effects on Phase Separation and Viscosity of Lead-Borate</b> I. Biron and A. Barbu	477
<b>Influence of Nitrogen Ion-Implantation on Weathering of Lead Glasses</b> C.Y. Wang, C. Min, X. Guoxing and W.M. Zhang	483
<b>Structural Investigation of Oxyfluoronitride Glasses</b> J.P. Fletcher, S.H. Risbud, S. Hayashi and R.J. Kirkpatrick	493
<b>Effect of Cl<sub>2</sub> in Sintering Atmosphere on Intrinsic and Radiation Induced Defects in VAD SiO<sub>2</sub> Optical Fibers</b> A. Kashiwazaki, K. Muta and H. Kawazoe	501
<b>Dielectric Response of Silica Aerogels</b> A.A.d. Silva, D.I. dos Santos and M.A. Aegerter	507