

## SUBHASH MAHAJAN

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### Research Interests

Structure- property relations in functional materials and deformation behavior of solids.

### Professional Experience

July 2006- Regents' Professor and Director, School of Materials, Arizona State University, Tempe

Nov. 2000- July 2006 Professor and Chair, Chemical and Materials Engineering, Arizona State University, Tempe

Jul. 2000-Oct. 2000 Professor and Interim Chair, Chemical and Materials Engineering, Arizona State University, Tempe

Jul. 1999-Jun. 2000 Professor and Associate Chair, Chemical, Bio & Materials Engineering, Arizona State University, Tempe

1997 – Jun. 1999 Professor of Electronic Materials, Arizona State University, Tempe

1993 Visiting Professor, Ecole Centrale de Lyon, Ecully, France (summer)

1991 Visiting Professor, University of Antwerp, Antwerp, Belgium (spring)

1983-97 Professor of Electronic Materials, Carnegie Mellon University, Pittsburgh

1981-83 Research Manager, AT&T Bell Laboratories, Murray Hill

1976 DAAD Fellow at the University of Göttingen, Göttingen, Germany (spring and summer)

1971-83 Member of Technical Staff, AT&T Bell Laboratories, Murray Hill

1968-71 Harwell Fellow, Atomic Energy Research Establishment, Harwell, England

1965-68 Research Metallurgist, University of Denver, Denver

1961-65 Research Assistant, University of California, Berkeley

### Education

B.Sc.		Panjab University, India; First Rank in the State	1959
B.E.	Metallurgy	Indian Institute of Science, India; First Rank in the Class	1961
Ph.D.	Materials Science and Engineering	University of California, Berkeley	1965

### Honors/Awards

Merit Scholarships in B.Sc and B.E., 1957 and 1959.

DAAD Fellowship, 1976.

Senior Crystal Growth Award of the Pittsburgh Chapter, 1995.

Fellow, ASM International, 1995.

Member, Sigma Xi, 1966.

The John Bardeen Award of TMS, 1998.

The Albert Sauveur Achievement Award of ASM, 1998.

Fellow, TMS, 1999

The 2004 Educator Award, TMS

Elected to NAE, 2005

Regents' Professor, ASU, 2006

### **Listings**

Who's Who in Technology.

Who's Who in the East.

Who's Who in America.

### **Professional Societies and Related Activities**

ASM International

Member, Board of Trustees (2006- )

Materials Research Society

Organized a symposium on "Defects in Semiconductors", Fall 1982

The Electrochemical Society

Member, Electronics Division (1976-83)

Divisional Editor, Electronics Division (1976-86)

The Minerals, Metals and Materials Society

Member, Physical Metallurgy Committee (1975-83)

Vice Chairman, Mechanical Metallurgy Committee (1978-79); member (1975-80)

Member, Electronic Materials Committee (1990-94)

Chairman, Electronic, Magnetic and Photonic Materials Committee (1984-86)

Director, TMS Board (1986-89)

Other Professional Activities

Member, Materials Research Advisory Committee, Division of Materials Research, National Science Foundation (1989-92).

Member, MRL Site Panel (1993).

### **Editorial Activities**

#### Journals

Coordinating Editor, Acta Journals (2004- )

Editor, Acta Materialia (2001- ).

Editor, Materials Science and Engineering (R): Reports (1993- ).

Associate Editor, Materials Letters (1984- ).

Editor, Materials Science and Engineering (B): Solid State Materials for Adv. Technology (1988-2001 ).

#### Proceedings, Encyclopedias and Handbook

Edited with J.W. Corbett an MRS Symposium volume on "Defects in Semiconductors" (1983).

Edited with V.G. Keramidas an ECS symposium volume on "III-V Opto-Electronics Epitaxy and Device Related Processes" (1983).

Edited with L.C. Kimerling "The Concise Encyclopedia of Semiconducting Materials and Related Technologies", published by Pergamon Press (1992).

Editor, "Handbook on Semiconductors", volume 3, published by North-Holland (1994).

Edited with D. Bloor, R.J. Brooks and M.C. Flemings "The Encyclopedia of Advanced Materials", published by Pergamon Press (1994).

Edited with K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilshner and E.J. Kramer, "The Encyclopedia of Materials: Science and Technology," published by Elsevier Science Publishers (2001).

### **Book**

Co-authored with K.S. Sree Harsha an undergraduate textbook on "Principles of Growth and Processing of Semiconductors", published by McGraw-Hill (1999).

### **Other Publications**

Six invited review articles published in Phys. Stat. Sol., International Metallurgical Reviews, Progress in Materials Science, Semiconductors and Semimetals and Handbook on Semiconductors.

Over 210 contributed papers based on original research published in leading journals of materials science and engineering.

**List of Publications****1967**

1. S. Mahajan "On the Formation of Shock-Twins in Prestrained Iron", Proceedings of the Electron Microscopy society of America, Chicago, 320-21 (1967).
2. S. Mahajan, "The Inhibition of Shock-Twinning in Prestrained Armco Iron", Proceedings of the First International Conference of the Centre for High Energy Forming, 7.7.1.-7.7.22. (1967).

**1969**

3. S. Mahajan, "Twins and Complementary Twins in Shock-Hardened Iron", Phil. Mag. 19, 199-204 (1969).
4. S. Mahajan, "Shock-Induced Substructural Changes in Prestrained Iron", Phys. Stat. Sol. 33, 291-99 (1969).

**1970**

5. S. Mahajan, D.E. Barry and B.L. Eyre, "A Thin Twin and its Interaction with a Coherent Twin Boundary in Copper", Phil. Mag. 21, 43-52 (1970).
6. S. Mahajan, "Metallurgical Effects of Planar Shock Waves in Metals and Alloys", Phys. Stat. Sol. (a) 2, 187-201 (1970).
7. S. Mahajan, "Effects of Existing Substructure on Shock-Twinning Behavior of Iron", Phys. Stat. Sol. (a) 2, 217-23 (1970).

**1971**

8. S. Mahajan, "Twinning Matrices and their Application in Analyzing Electron Diffraction Patterns from Twinned B.C.C. and F.C.C. Lattices", Metallography 4, 43-49 (1971).
9. D.E. Barry and S. Mahajan, "On Analyzing Burgers Vectors of Dislocations Residing in a Coherent Twin Boundary", Phil. Mag. 23, 727-29 (1971).
10. S. Mahajan, "Twin-Slip and Twin-Twin Interactions in Mo-35 at.% Re Alloy", Phil Mag. 23, 781-94 (1971).
11. S. Mahajan and A.F. Bartlett, "Influence of Prior Mechanical and Thermal Treatments on Shock-Induced Substructures in Molybdenum", Acta Met. 19, 1111-19 (1971).

**1972**

12. S. Mahajan, "Evaluation of Slip Patterns Observed in Association with Deformation Twins in Mo-35 at.% Re Alloy", J. Phys. F: Metal Phys. 2, 19-23 (1972).
13. S. Mahajan and L. Himmel, "Yielding Behavior of a Silver-Oxygen Alloy", Scripta Met. 6, 171-74 (1972).
14. S. Mahajan, J.H. Evans and P. Wilyman, "Stacking Faults and Twins in Nonstoichiometric MoC", J. Amer. Cer. Soc. 55, 174-175 (1972).

15. S. Mahajan, "Nucleation and Growth of Deformation Twins in Mo-35 at.% Re Alloy", *Phil. Mag.* 26, 161-71 (1972).
16. S. Mahajan, "Formation of Dislocation Channels in Neutron Irradiated Molybdenum", *Proceedings of the Electron Microscopy Society of America*, Los Angeles, 672-73 (1972).
17. J.H. Evans, S. Mahajan and B.L. Eyre, "Void Formation During Annealing of Irradiated Molybdenum", *Phil. Mag.* 26, 813-820 (1972).
18. S. Mahajan and L. Himmel, "Deformation and Substructural Characteristics of Partially Internally Oxidized Silver-Based Alloy Single Crystals", *Acta Met.* 20, 1313-18 (1972).
19. S. Mahajan and L. Himmel, "Strengthening Mechanisms in Internally Oxidized Silver-Based Alloy Single Crystals", *Acta Met.* 20, 1319-23 (1972).
20. S. Mahajan, "Diffraction Contrast Behavior of Twinning Partials in B.C.C. Crystals", *J. App. Phys.* 43, 5201-02 (1972).

**1973**

21. S. Mahajan and G.Y. Chin, "Twin-Slip, Twin-Twin and Slip-Twin Interactions in Co-8 wt.% Fe Alloy Single Crystals", *Acta Met.* 21, 173-79 (1973).
22. S. Mahajan, "Observations on the Interaction of Twins with Grain Boundaries in Mo-35 at.% Re Alloy", *Acta Met.* 21, 255-60 (1973).
23. S. Mahajan and D.F. Williams, "Deformation Twinning in Metals and Alloys", *International Metallurgical Reviews* 18, 43-61 (1973).
24. S. Mahajan and G.Y. Chin, "Formation of Deformation Twins in F.C.C. Crystals", *Acta Met.* 21, 1353-63 (1973).

**1974**

25. L.H. Schwartz, S. Mahajan and J.T. Plewes, "Spinodal Decomposition in a Cu-9 wt.% Ni - 6 wt.% Sn Alloy", *Acta Met.* 22, 601-09 (1974).
26. J.A. Wilson, F.J. DiSalvo and S. Mahajan, "Charge Density Waves in Metallic, Layered, Transition-Metal Dichalcogenides", *Phys. Rev. Lett.* 32, 882-85 (1974).
27. S. Mahajan, M.R. Pinnel and J.E. Bennett, "Influence of Heat Treatments on Microstructures in an Fe-Co-V Alloy", *Met. Trans.* 5, 1263-72 (1974).
28. S. Mahajan and G.Y. Chin, "The Interaction of Twins with Existing Substructure and Twins in Cobalt-Iron Alloys", *Acta Met.* 22, 1113-19 (1974).

**1975**

29. J.A. Wilson, F.J. DiSalvo and S. Mahajan, "Charge-Density Waves and Superlattices in the Metallic Layered Transition Metal Dichalcogenides", *Advances in Physics* 24, 117-201 (1975).
30. F.M.A. Carpay, S. Mahajan, G.Y. Chin and J.J. Rubin, "Slip-Induced Cracking in Molybdenum Single Crystals", *Scripta Met.* 9, 451-57 (1975).
31. S. Mahajan, "Fragmented Twins in Mo-35 at.% Re Alloy", *Acta Met.* 23, 547-57 (1975).

32. S. Mahajan and K.M. Olson, "An Electron Microscopy Study of the Origin of Coercivity in an Fe-Co-V Alloy", AIP Conference Proceedings 24, 743-44 (1975).
33. S. Mahajan, "Interrelationship Between Slip and Twinning in B.C.C. Crystals", Acta Met. 23, 671-84 (1975).
34. S. Mahajan and G.Y. Chin, "Comments on Deformation Twinning in Silver- and Copper-Alloy Crystals", Scripta Met. 9, 815-17 (1975).
35. M. Eibschutz, F.J. DiSalvo, G.W. Hull, Jr. and S. Mahajan, "Ferromagnetism in Metallic  $\text{Fe}_x\text{TaS}_2$  ( $x \sim 0.28$ )", App. Phys. Lett. 27, 464-66 (1975).
36. S. Mahajan, "The Evolution of Intrinsic-Extrinsic Faulting in F.C.C. Crystals", Met. Trans. 6A, 1877-86 (1975).
37. F.M.A. Carpay, G.Y. Chin, S. Mahajan and J.J. Rubin, "Constrained Deformation of Molybdenum Single Crystals", Acta Met. 23, 1473-78 (1975).

**1976**

38. F.J. DiSalvo, D.E. Moncton, J.A. Wilson and S. Mahajan, "Coexistence of Two Charge-Density Waves of Different Symmetry in  $4\text{H-TaSe}_2$ ", Phys. Rev. B 14, 1543-46 (1976).
39. G.A. Rozgonyi, S. Mahajan, M.H. Read and D. Brasen, "Sources of Oxidation-Induced Stacking Faults in Czochralski Silicon Wafers", Appl. Phys. Lett. 29, 531-33 (1976).
40. M.R. Pinnel, S. Mahajan and J.E. Bennett, "Influence of Thermal Treatments on the Mechanical Properties of an Fe-Co-V alloy (Remendur)", Acta Met. 24, 1095-1106 (1976).

**1977**

41. S. Mahajan, G.A. Rozgonyi and D. Brasen, "A Model for the Formation of Stacking Faults in Silicon", Appl. Phys. Lett. 30, 73-75 (1977).
42. S. Mahajan, M.L. Green and D. Brasen, "A Model for the F.C.C.  $\rightarrow$  H.C.P. Transformation, its Applications, and Experimental Evidence", Met. Trans. (A)8A, 283-93 (1977).
43. F.M.A. Carpay, S. Mahajan, G.Y. Chin and J.J. Rubin, "The correlation of Textural and Microstructural Changes in Deformed Molybdenum Single Crystals", Acta Met. 25, 149-59 (1977).
44. S. Mahajan and G.Y. Chin, "Reply to Comments on Twin-Twin Interactions in FCC Crystals", Scripta Met. 11, 173-74 (1977).
45. S. Mahajan, D. Brasen and T. Wakiyama, "Electron Diffraction Patterns from Transformed Cobalt-Iron Alloys", Metallography 10, 179-87 (1977).
46. A.T. Winter, S. Mahajan and D. Brasen, "Observation of Faulted Dipoles in Deformed Silicon", Scripta Met. 11, 1157-58 (1977).
47. J.A. Wilson and S. Mahajan, "The Anomalous Behavior of  $\text{TiSe}_2$  and the Excitonic Insulator Mechanism", Comm. on Phys. 2, 23-29 (1977).

**1978**

48. S. Mahajan, K.J. Bachmann, D. Brasen and E. Buehler, "Defects in InP Homoepitaxial Layers", *J. Appl. Phys.* 49, 245-48 (1978).
49. S. Mahajan, E.M. Gyorgy, R.C. Sherwood, S. Jin, S. Nakahara, D. Brasen and M. Eibschutz, "Origin of Coercivity in a Cr-Co-Fe Alloy (Chromindur)" *Appl. Phys. Lett.* 32, 688-90 (1978).
50. A.T. Winter, S. Mahajan and D. Brasen, "Weak-Beam Electron Microscopy of Faulted Dipoles in Deformed Silicon", *Phil. Mag. A*, 37, 315-26 (1978).
51. G.Y. Chin, J.H. Wernick, T.H. Geballe, S. Mahajan and S. Nakahara, "Hardness and Bonding in A15 Superconducting Compounds", *Appl. Phys. Lett.* 33, 103-05 (1978).
52. S. Mahajan, J.H. Wernick, G.Y. Chin, S. Nakahara and T.H. Geballe, "Plastic Deformation of V<sub>3</sub>Si Single Crystals at Elevated Temperatures", *Appl. Phys. Lett.* 33, 972-74 (1978).
53. W.J. Kossler, A.T. Fiory, W.F. Lankford, J. Lindemuth, K.G. Lynn, S. Mahajan, R.P. Minnich, K.G. Petzinger and C.E. Stronach, "Diffusion and Trapping of Positive Muons in Al:Cu Alloys and in Deformed Al", *Phys. Rev. Lett.* 41, 1558-61 (1978).
54. S. Mahajan, D. Brasen and T. Wakiyama, "Transformation-Induced Microstructures in Cobalt-Iron Alloys", *Met. Trans. (A)*9A, 1817-24 (1978).

**1979**

55. S. Mahajan, W.D. Johnston, Jr., M.A. Pollack and R.E. Nahory, "The Mechanism of Optically Induced Degradation in InP/InGaAsP Heterostructures", *Appl. Phys. Lett.* 34, 717-19 (1979).
56. S. Nakahara, S. Mahajan, J.H. Wernick and G.Y. Chin, "Diffraction Contrast Behavior of Grown-In Dislocations in V<sub>3</sub>Si Single Crystals", *J. Appl. Phys.* 50, 3552-55 (1979).
57. S. Mahajan, D. Brasen and P. Haasen, "Lüders Bands in Deformed Silicon Crystals", *Acta Met.* 27, 1165-73 (1979).
58. S. Mahajan, W.A. Bonner, A.K. Chin and D.C. Miller, "The Characterization of Highly-Zinc-Doped InP Crystals", *Appl. Phys. Lett.* 35, 165-68 (1979).
59. A.K. Chin, H. Temkin, S. Mahajan, A.A. Ballman, W.A. Bonner and A.G. Dentai, "Evaluation of Defects in InP and InGaAsP by Transmission Cathodoluminescence", *J. Appl. Phys.* 50, 5707-09 (1979).
60. A.K. Chin, S. Mahajan and A.A. Ballman, "Imaging of Dislocations in InP using Transmission Cathodoluminescence", *Appl. Phys. Lett.* 35, 784-86 (1979).

**1980**

61. S. Jin, S. Mahajan and D. Brasen, "Mechanical Properties of Fe-Cr-Co Ductile Permanent Magnet Alloys", *Met. Trans. (A)*. 11, 69-76 (1980).
62. S. Nakahara and S. Mahajan, "The Influence of solution pH on Microstructure of Electrodeposited Cobalt", *J. Elect. Chem. Soc.* 127, 283-88 (1980).
63. A.K. Chin, V.G. Keramidis, W.D. Johnston, Jr., S. Mahajan and D.D. Roccasecca, "Evaluation of Defects and Degradation in GaAs-GaAlAs Wafers Using Transmission Cathodoluminescence", *J. Appl. Phys.* 51, 978-83 (1980).

64. S. Vaidya and S. Mahajan, "Accommodation and Formation of  $\{11\bar{2}1\}$  Twins in HCP Cobalt Single Crystals", *Acta Met.* 28, 1123-31 (1980).
65. S. Vaidya, S. Mahajan and C.M. Preece, "Role of Twinning in Cavitation Erosion Behavior in HCP Cobalt Single Crystals", *Met. Trans. (A)*, 11A, 1139-50 (1980).
66. S. Mahajan, S. Jin and D. Brasen, "Micro Twinning in a Spinodally Decomposed Fe-Cr-Co Alloy", *Acta Met.* 28, 971-77 (1980).
67. M. Eibschutz, S. Mahajan, S. Jin and D. Brasen, "Phase Separation in a Low-Cobalt Cr-Co-Fe Alloy", *J. of Magn. and Magnetic Mats.* 15-18, 1181-82 (1980).
68. S. Vaidya and S. Mahajan, "Glide Ahead of Terminating  $\{10\bar{1}2\}$  Twins in Co", *Scripta Met.* 14, 623-26 (1980).
69. H. Gleiter, S. Mahajan and K.J. Bachmann, "Migrating Boundaries as Sources of Dislocations", *Acta Met.* 28, 1603-10 (1980).

### 1981

70. S. Mahajan, "Accommodation at Deformation Twins in B.C.C. Crystals", *Met. Trans. (A)* 12A, 379-86 (1981).
71. S. Mahajan, V.G. Keramidas, A.K. Chin W.A. Bonner and A.A. Ballman. "The Perfection of Iso-Epitaxial Layers Grown on (001) InP Substrates", *Appl. Phys. Letts.* 38, 255-258 (1981).
72. S. Mahajan, W.D. Johnston, Jr., M.A. Pollack and R.E. Nahory, "Simulation of Degradation Behavior of InP/InGaAsP Heterostructures by Optical Excitation", *Inst. Phys. Conf. Series No. 50*, 437-41 (1981).
73. S. Mahajan, V.G. Keramidas, A.K. Chin, S.N.G. Chu, W.A. Bonner and D.D. Manchon, Jr., "The Replication, Generation and Reduction of Dislocations during Iso-Epitaxy on InP Substrates", *Inst. Phys. Conf. Series No. 59*, 413-18 (1981).
74. V.G. Keramidas, S. Mahajan, H. Temkin and W.A. Bonner, "On the Perfection of InP and InGaAsP Epitaxial Layers", *Inst. Phys. Conf. Series No. 56*, 95-104 (1981).
75. V.G. Keramidas, H. Temkin and S. Mahajan, "Ohmic Contacts to InP and InGaAsP", *Inst. Phys. Conf. Series No. 56*, 293-99 (1981).
76. S.N.G. Chu, S. Mahajan, K.E. Strege and W.D. Johnston, Jr., "Reduction of Threading Dislocations in Iso-Epitaxial Layers Grown on (001) InP Substrates by Misfit Stresses", *Appl. Phys. Letts.* 38, 766-68 (1981).
77. H. Temkin, V.G. Keramidas and S. Mahajan, "Thermal Decomposition of InP and its Influence on Iso-Epitaxy", *J. Electrochem. Soc.* 128, 1088-91 (1981).
78. S. Mahajan and A.K. Chin, "The Status of Current Understanding of InP and InGaAsP Materials", *J. Cryst. Growth* 54, 138-49 (1981).
79. B.V. Dutt, S. Mahajan, R.J. Roedel, G.P. Schwartz, D.C. Miller and L. Derick, "Stacking Faults and Substructure in GaAs/(Ga,Al) As Heteroepitaxial Layers: Origin and Elimination", *J. Electrochem. Soc.* 128, 1573-78 (1981).



80. S. Mahajan, "The Interrelationship Between Structure and Properties in InP and InGaAsP Materials", Defects in Semiconductors edited by J. Narayan and T.Y. Tan, North-Holland, Inc., 465-79 (1981).
81. A.K. Chin, H. Temkin, and S. Mahajan, "Transmission Cathodoluminescence", Bell System Tech. Journal, 60, 2187-2226 (1981).
82. M. Eibschutz, S. Mahajan, F.J. DiSalvo, G.W. Hull, and J.V. Waszczak, "Ferromagnetism in Metallic Intercalated Compounds  $\text{Fe}_x\text{TaS}_2$  ( $0.20 \leq x \leq 0.34$ )", J. Appl. Phys. 52, 2098-2100 (1981).

**1982**

83. S. Mahajan, V.G. Keramidas and W.A. Bonner, "The Influence of Intermittent Growth Procedures on Dislocation Densities in InP Epi-Layers", J. Electrochem. Soc. 129, 1556-59 (1982).
84. H. Temkin, S. Mahajan, M.A. DiGiuseppe and A.G. Dentai, "Optically Induced Catastrophic Degradation in InGaAsP/InP Layers", Appl. Phys. Lett. 40, 562-65 (1982).
85. S. Mahajan, D. Brasen, M.A. DiGiuseppe, V.G. Keramidas, H. Temkin, C.L. Zipfel, W.A. Bonner and G.P. Schwartz, "Manifestations of Melt-Carry-Over in InP and InGaAsP Layers Grown by Liquid Phase Epitaxy", Appl. Phys. Lett. 41, 266-69 (1982).
86. S. Jin, D. Brasen, and S. Mahajan, "Coercivity Mechanisms in Fe-Cr-Co Magnet Alloys", J. Appl. Phys. 53, 4300-03 (1982).
87. A.K. Chin, C.L. Zipfel, S. Mahajan, F. Ermanis, and M.A. DiGiuseppe, "Cathodoluminescence Evaluation of Dark Spot Defects in InP/InGaAsP Light Emitting Diodes", Appl. Phys. Lett., 41, 555-57 (1982).

**1983**

88. R.A. Logan, C.H. Henry, F.R. Merritt and S. Mahajan, "Liquid Phase Epitaxial Growth on  $\{111\}_{\text{In}}$  Planes of InP", J. Appl. Phys., 54, 5462-63 (1983).
89. H. Temkin, S. Mahajan, and R.A. Logan, "Optically Induced Catastrophic Degradation in InGaAsP Laser Structures", Inst. Phys. Conf. Ser. No. 67, 279-84 (1983).
90. S. Mahajan, "The Sources of Defects in InP/InGaAsP Emitters", Inst. Phys. Conf. Ser. No. 67, 259-72 (1983).
91. P.E. Sulewski, R.C. Dynes, S. Mahajan and D.J. Bishop, "Study of Defects in Optoelectronic Materials Using a Scanning Acoustic Microscope", J. Appl. Phys. 54, 5711-14 (1983).

**1984**

92. S. Mahajan, H. Temkin, and R.A. Logan, "Formation of Optically Induced Catastrophic Degradation Lines in InGaAsP Epilayers", Appl. Phys. Lett., 44, 119-21 (1984).
93. S. Mahajan, "The Contributions of Metallurgy and Materials Science to the Evolution of Solid-State Electronics", J. Metals, 36, 47-50 (1984).
94. S. Mahajan, V.G. Keramidas, and J.H. Wernick, "InP and InGaAsP Semiconducting Materials for Optical Communication", J. Metals, 36, 37-41 (1984).
95. S. Mahajan, B.V. Dutt, H. Temkin, R.J. Cava, and W.A. Bonner, "Spinodal Decomposition in InGaAsP Epitaxial Layers", J. Cryst. Growth, 68, 589-95 (1984).

96. R.A. Logan, H. Temkin, F.R. Merritt, and S. Mahajan, "GaInAsP/InP Buried Heterostructure Formation by Liquid Phase Epitaxy", *Appl. Phys. Lett.*, 45, 1275-77 (1984).
97. S. Mahajan, A.K. Chin, C.L. Zipfel, D. Brasen, B.H. Chin, R.T. Tung and S. Nakahara, "The Origin of Dark Spot Defects in InP/InGaAsP Aged Light Emitting Diodes", *Mats. Lett.*, 2, 184-88 (1984).

### 1985

98. S. Mahajan, R.A. Logan, S.N.G. Chu, H.M. Cox, M.A. Koza and V.G. Keramidas "InP Growth Around Mesas Defined by {111}-In and (001) Planes", in proceedings of the conference on "Microscopy of Semiconducting Materials", edited by A.G. Cullis and D.B. Holt, Institute of Phys. Conf. Ser. No. 76, 245-50 (1985).
99. D.L. Meier, J. Gregg, A. Rohatgi, T.W. O'Keefe, P. Rai-Choudhury, R.B. Campbell and S. Mahajan "Twin Plane Effects in Dendritic Web Silicon", published in Proceedings of the Eighteenth IEEE Photovoltaic Specialists Conference, Las Vegas, Nevada, October 21-25, 1985, 596-603.

### 1986

100. S. Mahajan, "Deformation Behavior of Czochralski Silicon Single Crystals at Small Strains", published in "Mechanical Properties and Phase Transformations in Engineering Materials", edited by S.D. Antolovich, R.O. Ritchie, and W.W. Gerberich (TMS), 325-34 (1986).
101. S. Mahajan, "Growth- and Processing-Induced Defects in Compound Semiconductors", published in "Advances in Electronic Materials", edited by B.W. Wessels and G.Y. Chin, American Society of Metals, 233-62 (1986).
102. S. McDevitt, B.E. Dean, D.J. Ryding, F. Scheltens and S. Mahajan, "Characterization of As-grown CdTe and (Cd,Zn)Te Single Crystal Substrates", *Mats. Letts.* 4, 451-54 (1986).

### 1987

103. K.R. Elias, S. Mahajan, C.L. Bauer, A.G. Milnes and W.A. Bonner, "Spreading of Au Dots on InP Surfaces", *J. Appl. Phys.*, 62, 1245-50 (1987).
104. M.A. Shahid, S. Mahajan, D.E. Laughlin and H.M. Cox, "Atomic Ordering in  $Ga_{0.47}In_{0.53}As$  and  $Ga_xIn_{1-x}As_yP_{1-y}$  Alloy Semiconductors", *Phys. Rev. Letts.* 58, 2567-70 (1987).
105. M.A. Shahid, S.C. McDevitt, S. Mahajan and C.J. Johnson, "The Characterization of  $Cd_xZn_{1-x}Te$  Crystals", *Inst. Phys. Conf. Ser. No. 87*, 321-25 (1987).
106. J. Gregg, D.L. Meier, S. Mahajan and J.A. Spitznagel, "Characterization of Dendritic Web Si Solar Cells by Cross-Sectional TEM". *Inst. Phys. Conf. Ser. No. 87*, 517-22 (1987).

### 1988

107. M.A. Shahid and S. Mahajan, "Long-Range Atomic Order in  $Ga_xIn_{1-x}As_yP_{1-y}$  Epitaxial Layers", *Phys. Rev. B* 38, 1344-50 (1988).
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