

CONTENTS

Preface	ix
Acknowledgments	xi
Materials Research Society Symposium Proceedings.....	xii

***DISLOCATION AND DEFORMATION
MECHANISMS IN THIN METAL FILMS
AND MULTILAYERS I***

Constrained Diffusional Creep in Thin Copper Films	P1.2
D. Weiss, H. Gao, and E. Arzt	
An Experimental and Computational Study of the Elastic-Plastic Transition in Thin Films	P1.3
Erica T. Lilleodden, Jonathan A. Zimmerman, Stephen M. Foiles, and William D. Nix	
"Reverse" Stress Relaxation in Cu Thin Films	P1.4
R. Spolenak, C.A. Volkert, S. Ziegler, C. Panofen, and W.L. Brown	
Stress Evolution in a Ti/Al(Si,Cu) Dual Layer During Annealing.....	P1.5
Ola Bostrom, Patrice Gergaud, Olivier Thomas, and Philippe Boivin	
Study of the Yielding and Strain Hardening Behavior of a Copper Thin Film on a Silicon Substrate Using Microbeam Bending.....	P1.9
Jeffrey N. Florando and William D. Nix	
Mechanical Behavior of Thin Cu Films Studied by a Four-Point Bending Technique	P1.10
Volker Weihnacht and Winfried Brückner	

***DISCRETE DISLOCATIONS:
OBSERVATIONS AND SIMULATIONS***

Dislocation Dynamics Simulations of Dislocation Interactions in Thin FCC Metal Films	P2.2
Prita Pant, K.W. Schwarz, and S.P. Baker	
Discrete Dislocation Simulation of Thin Film Plasticity	P2.3
B. von Blanckenhagen, P. Gumbsch, and E. Arzt	

- * **Influence of Film/Substrate Interface Structure on Plasticity in Metal Thin Films** P2.6
G. Dehm, B.J. Inkson, T.J. Balk, T. Wagner, and E. Arzt

- Observations of Dislocation Motion and Stress Inhomogeneities in a Thin Copper Film** P2.7
T. John Balk, Gerhard Dehm, and Eduard Arzt

***DISLOCATIONS AND DEFORMATION
MECHANISMS IN THIN FILMS AND
SMALL STRUCTURES***

- Solid Solution Alloy Effects on Microstructure and Indentation Hardness in Pt-Ru Thin Films.....** P3.2
Seungmin Hyun, Oliver Kraft, and Richard P. Vinci

- Lack of Hardening Effect in TiN/NbN Multilayers** P3.3
Jon M. Molina-Aldareguia, Stephen J. Lloyd, Zoe H. Barber,
and William J. Clegg

- Temperature and Strain Rate Dependence of Deformation-Induced Point Defect Cluster Formation in Metal Thin Foils** P3.5
K. Yasunaga, Y. Matsukawa, M. Komatsu, and M. Kiritani

- Dislocation Locking by Intrinsic Point Defects in Silicon** P3.9
Igor V. Peidous, Konstantin V. Loiko, Dale A. Simpson,
Tony La, and William R. Frenslay

- Optical Study of SiGe Films Grown With Low Temperature Si Buffer.....** P3.11
Y.H. Luo, J. Wan, J.L. Liu, and K.L. Wang

- Thickness-Fringe Contrast Analysis of Defects in GaN** P3.12
Jeffrey K. Farrer, C. Barry Carter, Z. Mao, and Stuart McKernan

***DISLOCATIONS IN
SMALL STRUCTURES***

- * **Modeling of Dislocations in an Epitaxial Island Structure** P4.2
X.H. Liu, F.M. Ross, and K.W. Schwarz

*Invited Paper

Cambridge University Press

978-1-558-99609-0 — Dislocations and Deformation Mechanisms in Thin Films and Small Structures

Edited by Oliver Kraft , Klaus W. Schwarz , Shefford P. Baker , L. Ben Freund , Robert Hull

Table of Contents

[More Information](#)

**Misfit Dislocation Introduction During the Epitaxial Growth of
InAs Islands on GaP** P4.3

Vidyut Gopal, Alexander L. Vasiliev, and Eric P. Kvam

**X-ray Diffuse Scattering From Misfit Dislocation at Buried
Interface.....** P4.9

Kaile Li, Paul F. Miceli, Christian Lavoie, Tom Tiedje,
and Karen L. Kavanagh

***DISLOCATIONS AND DEFORMATION
IN EPITAXIAL LAYERS***

**Development of Cross-Hatch Morphology During Growth of
Lattice Mismatched Layers.....** P5.2

A. Maxwell Andrews, J.S. Speck, A.E. Romanov, M. Bobeth,
and W. Pompe

**Mechanism for the Reduction of Threading Dislocation Densities
in $\text{Si}_{0.82}\text{Ge}_{0.18}$ Films on Silicon on Insulator Substrates** P5.3

E.M. Rehder, T.S. Kuan, and T.F. Kuech

**TEM Study of Strain States in III-V Semiconductor Epitaxial
Layers** P5.5

André Rocher, Anne Ponchet, Stéphanie Blanc, and Chantal Fontaine

**A Kinetic Model for the Strain Relaxation in Heteroepitaxial Thin
Film Systems** P5.11

Y.W. Zhang, T.C. Wang, and S.J. Chua

***DISLOCATION FUNDAMENTALS:
OBSERVATIONS, CALCULATIONS
AND SIMULATIONS***

*** Dislocation Core Spreading at Interfaces Between Crystalline and
Amorphous Solids.....** P6.6

Huajian Gao, Lin Zhang, and Shefford P. Baker

Dislocation Networks Strain Fields Induced by Si Wafer Bonding..... P6.9

J. Eymery, F. Fournel, K. Rousseau, D. Buttard, F. Leroy,
F. Rieutord, and J.L. Rouvière

*Invited Paper

***DISLOCATIONS AND DEFORMATION
MECHANISMS IN THIN METAL FILMS
AND MULTILAYERS II***

Misfit Dislocations in Epitaxial Ni/Cu Bilayer and Cu/Ni/Cu Trilayer Thin Films	P7.1
Tadashi Yamamoto, Amit Misra, Richard G. Hoagland, Mike Nastasi, Harriet Kung, and John P. Hirth	
Structure and Mechanical Behavior Relationship in Nano-Scaled Multilayered Materials.....	P7.3
A. Sergueeva, N. Mara, and A.K. Mukherjee	
Dislocations in Thin Metal Films Observed With X-Ray Diffraction	P7.6
Léon J. Seijbel and Rob Delhez	
Local Microstructure and Stress in Al(Cu) Thin Film Structures Studied by X-Ray Microdiffraction	P7.7
B.C. Valek, N. Tamura, R. Spolenak, A.A. MacDowell, R.S. Celestre, H.A. Padmore, J.C. Bravman, W.L. Brown, B.W. Batterman, and J.R. Patel	
Deformation Microstructure of Cold Gas Sprayed Coatings	P7.10
C. Borchers, T. Stoltenhoff, F. Gärtner, H. Kreye, and H. Assadi	
Plastic Deformation of Thin Metal Foils Without Dislocations and Formation of Point Defects and Point Defect Clusters	P7.11
Michio Kiritani, Kazufumi Yasunaga, Yoshitaka Matsukawa, and Masao Komatsu	

Author Index

Subject Index