VACANCIES AND INTERSTITIALS IN METALS AND ALLOYS

Proceedings of the International Conference on Vacancies and Interstitials in Metals and Alloys held in Berlin, Germany, September 14-19, 1986

Part 2

Guest Editors: C. Abromeit
H. Wollenberger

TRANS TECH PUBLICATIONS
V. DEFECT-SOLUTE-INTERACTION

Interstitial Diffusion of Metallic Solutes in Irradiated Alloys
K.H. Robrock

Data Analysis of Damage Rate and Annealing of Radiation Defects, Based on Solving of Kinetics Equations
I.E. Podchinenov and I. Sh. Trakhtenberg

Rate-Theory Simulation of the PAC-Recorded Isochronal Recovery of Defects in Irradiated Metals
J. Golczewski, W. Frank and K. Maier

On the Formation of Highly Symmetric Impurity-Vacancy Clusters in Ion-Implanted FCC Metals
G. Lindner and G. Weyer

EXAFS Study on Electron Irradiated Dilute Al(Zn)
T. Bolze and J. Peisl

Ultrasonic Peak Doublets in Dilute Aluminium Alloys: Tilted Mixed Dumbbell Cages
E.C. Johnson and A.V. Granato

Diffuse X-Ray Scattering from Defects and Defect Correlations in Dilute Al-Alloys after Low Temperature Neutron Irradiation
R. Rauch, A. Schmalzbauer, G. Wallner and J. Peisl

Charge Density Distribution around Fe-Vacancy Pair in Aluminium
S. Nasu, H. Adachi and F.E. Fujita

Mössbauer Study of Iron Defect Associations in Deformed Aluminium
S. Nasu, R.S. Preston and U. Gonser

Defect-Impurity Interaction in Sn- or Ni-Implanted Aluminium
E. Yagi, F. Kano, S. Nakamura, M. Iwaki and T. Osaka

Positron Lifetime Studies on the Annealing of Aluminium Irradiated with p or He at 20 K
H. Rajainmäki, S. Linderoth, R.M. Nieminen and H.E. Hansen

Interstitial Solute Interaction in Irradiated Ag- and Fe-Alloys
C. Börner, H.D. Bohn and K.-H. Robrock

Radiation Induced Solute Transport in Dilute Copper, Silver and Gold Alloys
P. Vaessen, P. Ehrhart, H. Höfer, W. Jäger, D. Keldenich, W. Schilling and B. Weckermann

A Positron Lifetime and Doppler-Broadening Study of Vacancies and Precipitation in Culn Alloys
W. Lühr-Tanck, M. Ederhof, A. Sager and H. Bosse

Trapping of Lattice Defects at $^{111}$In Atoms in Cold-Worked Copper
M. Deicher, G. Grübel, W. Reiner and Th. Wichert

Impurity Effects on the Vacancy Clustering in Electron Irradiated Au
C. Corbel and P. Moser

$^{119}$Sb Mössbauer Study on Vacancy-Solute Interactions in Gold
I. Tanaka, S. Nasu, F.E. Fujita, F. Ambe, S. Ambe and T. Okada

Vacancy-Solute Interactions in Dilute Au-Co Alloys
I. Tanaka, M. Mori, S. Nasu and F.E. Fujita

Diffuse X-Ray Scattering Studies of n and e$^-$-Irradiated Ni and Dilute Ni Alloys
R.S. Averback and P. Ehrhart
Electron-Positron-Channeling and Mössbauer-Effect Studies of Indium-Vacancy Complexes in Ion-Implanted Nickel


Radiogenic Sn-Vacancy Complexes in FCC Nickel and Cobalt

E. Danielsen, K.B. Nielsen, J.W. Petersen, M. Søndergaard and G. Weyer 669

Effect of Si, Ge, Sb Solute Atoms on the Void Nucleation in Electron Irradiated Nickel

T. Nguy, C. Corbel, A. Barbu and P. Moser 675

Hydrogen-Vacancy Interactions in Ni Studied by Perturbed Gamma-Gamma Angular Correlations

G.S. Collins and R.B. Schuhmann 681

Effects of the Decoration of Vacancies by Carbon Atoms in α-Iron

W. Frank, M. Weller, J. Diehl and A. Seeger 685

The Resistivity Recovery of High Purity and Carbon-Doped Iron after Low and Room Temperature Deformation

S. Takaki, T. Kimura and H. Kimura 691

Experimental Criteria for a Two-Interstitial Annealing Mechanism in Irradiated α-Fe

F. Walz and H.J. Blythe 697

Trapping of Interstitials and Vacancies at Solute Molybdenum Atoms in Iron (0.3 at.% Mo) Studied by the Ion-Channeling/Lattice-Location Technique

M.M. Kijek and D.W. Palmer 703

Deviations from Matthiessen’s Rule and Defect Annealing in Electron-Irradiated FeCr and FeV Alloys

F. Maury, A. Lucasson, P. Lucasson, F. Faudot, J. Bigot and P. Moser 709

Magnetic Disaccommodation Phenomena in Low-Temperature Electron-Irradiated Cobalt

H.J. Blythe, E. Klugmann, F. Dworschak and F. Walz 715

Vacancy Recovery after 20 K Electron Irradiation in Sn and Te Doped Bismuth

C. Corbel, P. Bois, P. Moser and I. Lemahieu 721

Stage II-Recovery Reactions in BCC Transition Metals

H. Schultz 727

Recovery of Radiation Damage in Niobium with Various Dopants

J. Petzold and H. Schultz 733

Damage Rate and Isochronal Recovery on 2 MeV Electron Irradiated Zr-Based Alloys

C. Abromeit, R.H. Zee and S.R. MacEwen 739

The Influence of Sn Additions on the Recovery of Electron Irradiated α-Zr: A Positron Annihilation Study

G.M. Hood and R.J. Schultz 745

Hydrogen in Vacancies in Mo and Ni

S. Linderoth, H. Rajainmäki, B. Nielsen, H.E. Hansen, R.M. Nieminen and K. Petersen 751

Impurity-Point Defect Interactions in Ion Implanted Metastable Systems

O. Meyer, A. Azzam, M.K. Kloska and A. Turos 757
VI. DEFECT DISLOCATION INTERACTION

Dislocation Sink Strength in Strained HCP Crystals
N. Smetniansky - De Grande, E.J. Savino and C.N. Tomé

Interaction Mechanisms between Dislocations and Point Defects in FCC Metals
J. Baur, W. Benoit, M. Bujard and G. Gremaud

Vacancy Emission from and the Absorption to a Helical Dislocation
in Aluminium
K. Mízuno and T. Kino

Point Defects in Deformed Metals Studied by Perturbed Gamma-Gamma Angular Correlations
G.S. Collins

A Distribution of Activation Energy for Recovery between 50 and 85 K in Deformed Aluminium
T. Tsuchida, I. Hashimoto and H. Yamaguchi

Recovery Spectrum of Cold Worked Aluminium
P. Vostrý, V. Hašlar and B. Sprušil

Irradiation Softening and the Interaction of Moving Dislocations with Frenkel-Pairs in α-Iron
Y. Aono, E. Kuramoto, D. Brunner and J. Diehl

VII. DEFECT CLUSTERING

Nucleation Process of Voids and Other Vacancy Clusters in Some Metals and Alloys
J. Takamura, Y. Shirai, K. Furukawa and F. Nakamura

Comparative Study of Vacancy Clustering in Al and Cu Using PAC, Channeling and Positron Annihilation
Th. Wichert

Computer Simulation of Interstitial Clusters in BCC and HCP Metals
A.H. Foster, J.M. Harder and D.J. Bacon

Calculation of the Properties of Vacancy Clusters in Copper Using a New, Efficient Energy Minimization Scheme
M.J. Sabochick, S. Yip and N.Q. Lam

Vacancy and Small Vacancy Clusters in HCP Metals - A Static Study
A.M. Monti

The Role of Two-Dimensional Self-Interstitial Diffusion in Void Lattice Formation and other Defect Phenomena in Metals
J.H. Evans

A Theory of Void Lattices
C.H. Woo and W. Frank

Periodic {001} Walls of Defects in Proton-Irradiated Cu and Ni
W. Jäger, P. Ehrhart, W. Schilling, F. Dworschak, A.A. Gadalla and N. Tsukuda

Detection of Space- and Time-Wise Fluctuation of Point Defect Reactions by the Observation of Small Vacancy Clusters under Electron Irradiation
T. Yoshiie and M. Kiritani
Diffusion Mechanisms for Enhanced Vacancy Accumulation near Planar Sinks
A.J.E. Foreman, B.N. Singh and A. Horsewell

In-Situ Observations of Point-Defect Precipitation at Dislocations in Electron-Irradiated Silver
M.L. Jenkins, G.J. Hardy and M.A. Kirk

Diffuse X-Ray Scattering from Defects after Low Temperature Neutron Irradiation
G. Wallner, H. Franz, R. Rauch, A. Schmalzbauer and J. Peisl

Characterization of Vacancy and Vacancy-Gas Agglomerates in Aluminium Irradiated with Medium Energy Protons by Positron Annihilation
K.O. Jensen, M. Eldrup, B.N. Singh, A. Horsewell, M. Victoria and W.F. Sommer

First Observations of the Initial Annealing Stage in Stage III in Pure Aluminium and Copper by Positron Annihilation
I. Kanazawa, H. Murakami and M. Doyama

Impurity Effects on the Vacancy Clustering Process in Electron Irradiated Iron Dilute Alloys studied by Positron Techniques
P. Moser, C. Corbel, P. Lucasson and P. Hautojärvi

Vacancy Defects in 3.0 MeV Electron Irradiated Molybdenum Single Crystal at 20 K
A. Sen Gupta, P. Moser, A. Bourret, C. Corbel, S.V. Naidu, P. Sen and P. Hautojärvi

Study of Point Defect Clustering in Electron and Ion Irradiated Zirconium Alloys
C. Hellio, C.H. de Novion, A. Marraud and L. Boulanger

Anisotropy: A Valuable Ally in the Study of Point Defect Clustering
C. Weinberg and Y. Quéré

Dislocation Loop Kinetics in \( \alpha \) Fe-Mo, \( \alpha \) Cu-Ti and Cu-Ni Alloys during Electron Irradiation
C. Kinoshita, K. Nakai and S. Kitajima

The Structure of Nanocrystalline Metals Investigated by Positron Lifetime Spectroscopy
H.-E. Schaefer, R. Würschum, M. Scheytt, R. Birringer and H. Gleiter

VIII. RADIATION DAMAGE

Energetic Displacement Cascades and their Roles in Radiation Effects
R.S. Averback and D.N. Seidman

Production of Freely-Migrating Defects during Irradiation
L.E. Rehn and P.R. Okamoto

Insight into Cascade Processes Arising from Studies of Cascade Collapse
C.A. English and M.L. Jenkins

Point Defect Processes in the Defect Structure Development from Cascade Damage
M. Kiritani