TABLE OF CONTENTS

PREFACE vii
INVITED PAPERS xi
ICPA-7 REGISTRANTS xxxiii
IN MEMORIAM: W. BRANDT AND R. PAULIN 1
IN MEMORIAM: B.G. HOGG 8
METALS AND ALLOYS 9
POSITRONIUM(Ps) AND POSITRONIUM CHEMISTRY 167
TWO-DIMENSIONAL ANGULAR CORRELATION OF POSITRON ANNIHILATION RADIATION 249
POSITRON-ATOMIC AND MOLECULAR COLLISIONS 305
DEFECTS IN METALS 435
PHASE TRANSITIONS 597
NON-METALS 641
ADVANCES IN TECHNIQUES 799
DEFECTS IN ALLOYS AND AMORPHOUS ALLOYS 851
SURFACES AND POSITRON BEAMS 939
POSITRON ASTROPHYSICS 1001

M1 IN MEMORIAM: Positron Physics in the Writings of Werner Brandt and Robert Paulin
A.Dupasquier 1

M2 IN MEMORIAM: Benjamin G. Hogg
A.T.Stewart 8

Section A
METALS AND ALLOYS

R1 Electronic Structure Studies in Metals and Alloys
R.N.West 11

R3 Electron-Positron Interactions
Jouko Arponen and Irkki Pajanne 21

R6 Positrons in Metals
C.K.Majumdar 34

A1 2D Momentum Density and the Fermi Surface in Ni$_3$Ga
C.R.Bull, R.N.West, N.Kawamiya and N.Shiotani 40

A2 Selective Enhancement of Different Electron Populations by Electron-Positron Attraction: Application to Zn
S.Daniuk, G.Kontrym-Sznajd, J.Mayers, A.Rubaszek, H.Stachowiak, P.A.Walters and R.N.West 43

A3 Ab Initio Calculation of Electron and Two Photon Momentum Distributions using LMTO Formalism
A.K.Singh and T.Jarlborg 45
Table of Contents

A6  Self-Trapping and Adiabatic Diffusion of Positrons in Metals and Covalent Semiconductors
Alfred Seeger 48

A5  A Comparative Study of Momentum Density Distribution in α and ω Phases of Zirconium by Positron Annihilation Measurements
Surendra M. Sharma, S.K. Sikka and R. Chidambaram 52

A6  Reaction Rate Approach to $e^+$, $\mu^+$ and $\pi^+$ Trapping in Metals
A. Gochev and T. Troev 55

A7  The Positron State in Cu Based Random Alloys
P. E. Mijnarends and A. Bansil 58

A9  Positron Annihilation Studies on Rapidly Quenched Aluminium Based Iron-Rare Earth Alloys
S. Ramasamy, S. R. Dhanalakshmi, T. Nagrajan, A. Narayanasamy and J. A. Sekhar 61

A10 Studies on β Phase Solid Solution in Co-Ga Binary System by Positron Annihilation
Huang Maorong, Ying Dingzhen, Cao Chuan and Zhang Yuling 64

A11 The Approximate Validity of the LCW Theorem in Positron Annihilation
L. P. L. M. Rabou and P. E. Mijnarends 68

A12 Spin Polarisated Positron Annihilation in Nickel
Y. Mathys, A. A. Manuel, A. K. Singh, T. Jarlborg, E. Walker, R. Sachot, P. Descout and M. Peter 71

A13 Two-Photon Momentum Distribution in Paramagnetic Chromium
A. K. Singh and R. M. Singru 74

A14 Momentum Density and Fermi Surface Calculations in V-Mo Alloy
Y. Nakao and S. Wakoh 77

A15 A Study of Electron Momentum Distribution in Polycrystalline Niobium
B. K. Sharma and H. Singh 80

A16 High Pressure Doppler Broadening Measurements Performed on Iron in a Diamond Anvil
H. B. Radousky, R. L. Reichlin and R. H. Howell 83

A17 The Calculation of Annihilation Parameters from Arbitrary Wave Functions
D. M. Schrader 86

A18 On the Interpretation of Fourier Transform of Positron Annihilation Angular Correlation Curves
G. P. Das and P. Chaddah 88

A20 Positron Annihilation in Superconductors
D. N. Tripathy and M. Bhuyan 91

A21 Momentum-Dependent Enhancement Factors for an Electron Gas of High Density
A. Rubaszek, H. Stachowiak, E. Boronski and Z. Szotek 93

A22 Momentum-Dependent Enhancement Factors: Comparison of various Theories with the Experimental Data
A. Rubaszek and H. Stachowiak 96

A23 Two-Density Dependent Electron-Positron Correlation Potential
E. Boronski and R. M. Nieminen 100

A24 Positron Annihilation in Metals: High Momentum Components and Core Enhancement Effects
M. Sob 104
<table>
<thead>
<tr>
<th>Table of Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A27 Positron Annihilation at the Grain Boundaries of Polycrystals</td>
</tr>
<tr>
<td>I.Ya.Dekhtyar</td>
</tr>
<tr>
<td>107</td>
</tr>
<tr>
<td>A28 Positron Annihilation Angular Correlation Studies on Shocked Polycrystalline Aluminium</td>
</tr>
<tr>
<td>B.K.Godwal, Surendra M.Sharma and S.K.Sikka</td>
</tr>
<tr>
<td>109</td>
</tr>
<tr>
<td>A29 Positron Lifetime and Mossbauer Study on Hydrogenised Zr\textsubscript{72}Fe\textsubscript{25} Alloy</td>
</tr>
<tr>
<td>A.Balogh, J.Balogh, I.Dezsi, F.Aubertin, S.M.Fries and U.Gonser*</td>
</tr>
<tr>
<td>111</td>
</tr>
<tr>
<td>A31 Vacancy Clustering in Quenched and Deformed Ni and Quenched Au</td>
</tr>
<tr>
<td>P.Beasley, A.Alam, S.G.Usmar, P.G.Coleman and R.N.West H*</td>
</tr>
<tr>
<td>114</td>
</tr>
<tr>
<td>A32 Investigations of the V-Fe-H Alloys near the Critical Electron Concentration</td>
</tr>
<tr>
<td>A.Ostrasz, M.Szuszkiewicz, J.Chojc an and B.Rozenfeld</td>
</tr>
<tr>
<td>117</td>
</tr>
<tr>
<td>A33 Some changes of the Electronic Structure of FeCo Alloy on Ordering Investigated by Positron Annihilation and the Mossbauer Effect</td>
</tr>
<tr>
<td>Jan Chojc an, Marian Szuszkiewicz, Andrzej Ostrasz and Bronislaw Rozenfeld</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>A34 Positron Annihilation Studies in Amorphous Fe\textsubscript{80}Ni\textsubscript{18}B\textsubscript{12} and Fe\textsubscript{96}Ni\textsubscript{18}Mo\textsubscript{12}</td>
</tr>
<tr>
<td>A.Schiltz, A.Liolios, C.Elefteriades, M.Chardalas, S.Dedousis and Stfs Charalambous</td>
</tr>
<tr>
<td>122</td>
</tr>
<tr>
<td>A35 Positron Lifetime and Angular Correlation Study of Precipitation in Al-Zn Alloys</td>
</tr>
<tr>
<td>A.Bharthi, C.S.Sundar, P.Chowdhury and K.P.Gopinathan</td>
</tr>
<tr>
<td>125</td>
</tr>
<tr>
<td>A36 Positron Localization in Metallic Alloys: Affinity to Solute Clusters and Size Limitations</td>
</tr>
<tr>
<td>F.Bloileau, B.Geffroy and R.Paulin</td>
</tr>
<tr>
<td>128</td>
</tr>
<tr>
<td>A37 Positron Annihilation Studies in Cheverel Phase Compounds</td>
</tr>
<tr>
<td>S.R.Dhanalakshmi, S.Ramasamy, T.Nagarajan, Geetha Balakrishnan and G.V.Subba Rao</td>
</tr>
<tr>
<td>131</td>
</tr>
<tr>
<td>A38 Positron Measurements in 2H-TaSe\textsubscript{2} Crystals</td>
</tr>
<tr>
<td>Y.C.Jean and M.J.Fluss</td>
</tr>
<tr>
<td>134</td>
</tr>
<tr>
<td>A39 Study of Positron Diffusion by means of Depolarisation Experiments (e\textsuperscript{+}SR)</td>
</tr>
<tr>
<td>Alfred Seeger, Janos Major and Frank Jaggy</td>
</tr>
<tr>
<td>137</td>
</tr>
<tr>
<td>A40 PA and DSC Studies of Diffusion Mechanisms in Ni\textsubscript{3}Al and NiAl</td>
</tr>
<tr>
<td>M.Shimotomai, T.M.Wang, T.Iwata and M.Doyama</td>
</tr>
<tr>
<td>140</td>
</tr>
<tr>
<td>A41 The Effects of Tempering Temperature on Positron Annihilation Parameters and Behavior of Hydrogen in 4340 Steel</td>
</tr>
<tr>
<td>Gui Jianian, Du Fengmu, Wang Shaojie and Wang Zixiao</td>
</tr>
<tr>
<td>143</td>
</tr>
<tr>
<td>A42 Investigation of Phase Transitions and Structure Defects in Ferromagnetic Alloy Mn-Al-C by Positron Annihilation</td>
</tr>
<tr>
<td>Wang Shao-jie, Jhu Gaung-qu and Liu Shan-yi</td>
</tr>
<tr>
<td>145</td>
</tr>
<tr>
<td>A43 Positron Annihilation Study of Cu-Al-Zn-Mn-Ni Shape Memory Alloy</td>
</tr>
<tr>
<td>Gu Hua, He Yongshu, Yang Jianhua, Zhang Chunsheng and Zhao Liancheng</td>
</tr>
<tr>
<td>147</td>
</tr>
<tr>
<td>A44 Study on Types of Solid Solutions in Al-Ni Binary System by Positron Annihilation</td>
</tr>
<tr>
<td>Huang Maorong, Gu Hua and Zhang Yuming</td>
</tr>
<tr>
<td>150</td>
</tr>
<tr>
<td>A45 Determination of the Solubility of Niodymium in Iron by Positron Annihilation</td>
</tr>
<tr>
<td>Wang Yun yu, Liu Nian qing, Tian Zhong zhuo and Chang Xiang rong</td>
</tr>
<tr>
<td>153</td>
</tr>
<tr>
<td>A46 The Investigation of Structure and Grain in Electrodeposited Iron by Positron Lifetime</td>
</tr>
<tr>
<td>Wie-Zhong Yu, Bi-Song Cao, Hao-Ming Chen and De-Rong Gu</td>
</tr>
<tr>
<td>156</td>
</tr>
</tbody>
</table>
Table of Contents

A47 Estimation of Electron Momentum Distribution and Fermi Energy of some Amorphous Alloys by means of Doppler Broadening Technique

A50 Momentum-Dependent Enhancement Factors in Alkali Metals
H. Sorman and W. Puff

A51 Effects of Crystal Lattice on Positron Annihilation
Huang Xiaowu, Wang Kelin, Lin Zijing and Qin Jiahua

Section B
POSITRONIUM(Ps) AND POSITRONIUM CHEMISTRY

R2 On the Peculiarities and Analogies of Ps Chemical Reactions and its Radiation Yield Compared to Hydrogen
V. P. Shantarovich

B1 Basic Unsolved Problems in Positron Annihilation
O. E. Mogensen

B2 A Positron Annihilation Study of the Plastic Crystal Cyclooctane
J. Bruce, J. N. Sherwood, N. J. Pedersen and M. Eldrup

B3 Further Studies on the Formation of Thermalised o-Ps Atoms in Surfactant Solutions
Zeev B. Alfassi and Hans J. Ache

B4 Comparative Study between Electron Scavenger Effects on the Positronium Formation and on the Luminescence induced by Y-ray, Proton and He-Beams
Y. Ito, T. Azuma, Y. Katsumura, Y. Tabata and K. Kimura

B5 Positronium Reactions with Complexes of the Transition Metals in Methyl Alcohol Solutions
G. Duplatre, D. Kauffmann and J. Ch. Abbe

B7 Magnetic Quenching of Positronium in Organic Liquids
S. Rochanakij and D. M. Schrader

B8 High Spin - Low Spin Transition Studied by Positron Annihilation

B9 Experimental Limits on Asymmetric Positronium Formation in Optically Active Molecules
J. Van House, A. Rich and P. W. Zitzewitz

B10 Positron Annihilation Spectroscopy in Chemical Analysis
K. Venkateswaran, K. L. Cheng and Y. C. Jean

B11 Light Atom Kinetics Studied by Positronium and Muonium Atoms
Y. C. Jean

B14 Positronium Formation in Organic Liquids
O. E. Mogensen, N. J. Pedersen and F. M. Jacobsen

B15 A Monte Carlo Calculation of Positronium Formation Probability
T. Azuma, Y. Ito and Y. Tabata

B19 The Decay Rate of Orthopositronium
Table of Contents

B20 The Gamma Ray Energy Spectrum in Orthopositronium Three Gamma Decay
Chang Tianbao, Tang Hsiaowei and Li Yaoqing 212

B21 Photodetachment of the Positronium Negative Ion
A.K.Bhatia and Richard J.Drachman 215

B22 Motional Magnetic Field Effect on Spin States of \(e^+ - e^-\) Bound Pairs in Condensed Matter
R.S.Brusa, A.Dupasquier and S.Oss 216

B25 Positronium Halide Formation in Acceptor Doped Poly-Acetylene
E.Cartier, F.Heinrich, H.Kiess, G.Wieners and M.Monkenbusch 218

B26 A Study of Positronium and Viscosity in Two C_9 Organic Liquids
L.M.Diana, S.C.Sharma and S.R.Tuttle 221

B27 Influence of the Solvent Dielectric Constant on the o-Ps Diffusion Controlled Quenching Reaction
E.Lazzarini and A.L.Fantola Lazzarini 224

B29 Experimental and Theoretical Determination of Positronium Formation Probabilities in Organic Liquids
Sulabha Deuskar, Arvind Shaligram and S.K.David 227

B30 A Correlation Between the Electron Polarizability, Electron Density and the Pick-off Annihilation Lifetime
Arvind Shaligram, Sulabha Deuskar and S.K.David 230

B31 Positronium Formation and Inhibition in a Glycol-Water Mixture in the Liquid, Solid and Glassy Phases
G.Duplatre, J.Ch.Abbe and J.Talamoni 233

B32 Dependence of Ortho-Positronium Pick-off Annihilation Lifetime on Free Volume in Water-Cyclohexylamine Mixtures and Positronium Bubble Formation
K.Jeri 236

B33 Positron Annihilation in and Compressibility of Water-Organic Mixtures. The Systems Water-Ethanol and Water-\(n\)-Propanol
B.Rozenfeld, K.Jeri, A.Baranowski, J.Gilinski and S.Ernst 239

B34 Positron Interactions with Mixtures of Organic Liquids
A.Z.Varisov 242

B35 Observation of Physical Aging of some Triglycerides by Positron Lifetime Measurements
William W.Walker 244

B36 Positron Annihilation Studies of Activation Effects of Substituents upon Naphthalene Derivatives
F.H.Hsu, C.M.Chu, J.H.Hadley, Jr. and N.C.Yang 246

Section C
TWO-DIMENSIONAL ANGULAR CORRELATION OF POSITRON ANNIHILATION RADIATION

C1 Positron Annihilation in Alkali Metals

C2 Reconstruction of Momentum Densities from a Small Number of Directions in 2D-ACPAR: An Application to Vanadium Data
### Table of Contents

**Section C**

C3 A Study of the Equilibrium Vacancy Ensemble in Aluminium using 1D- and 2D-Angular Correlation of Annihilation Radiation  
M.J.Fluss, S.Berko, B.Chakraborty, K.R.Hoffmann, P.Lippel and R.W.Siegel  
257

C4 Positronium Formation in Voids of Vanadium  
M.Hasegawa, Y.J.He, K.R.Hoffmann, R.R.Lee, S.Berko and T.Takeyama  
260

C5 Two-dimensional Angular Correlation Studies of Nb, Mo and their Alloys  
J.H.Kaiser, P.A.Walters, C.R.Bull, A.Alam, N.Shiotani and R.N.West  
263

C6 Two-dimensional Angular Correlation Studies of the Fermi Surface of Chromium  
266

C7 Angular Correlation Study of Vanadium  
R.M.Singru, A.A.Manuel, A.K.Singh, R.Sachot, E.Walker, P.Descouts and M.Peter  
269

C8 Fourier Transform of Angular Correlation in V and Nb  
A.K.Singh, A.A.Manuel, R.M.Singru, T.Jarlborg, A.Vanuzzio and M.Peter  
273

C9 2D-ACPAR in A15 Compounds Experiment and Theory  
E.Walker, L.Hoffmann, A.A.Manuel, T.Jarlborg, A.K.Singh, R.Sachot and M.Peter  
276

C10 2D Angular Correlation of Positron Annihilation in Zinc  
S.Daniuk, G.Kontrym-Sznajd, J.Mayers, A.Rubaszek, H.Stachowiak, P.A.Walters and R.N.West  
279

C11 Fermi Surfaces of Ti, Ru and Re by 2D-ACAR  
S.Tanigawa, S.Terakado, K.Ito, A.Morisue and N.Shiotani  
282

C12 Fermi Surfaces in LaB<sub>6</sub>, CeB<sub>6</sub>, PrB<sub>6</sub> and NdB<sub>6</sub> by 2D-ACAR  
S.Tanigawa, S.Terakado, K.Ito, A.Morisue, T.Kombatsubara, Y.Onuki and N.Shiotani  
285

C13 2D-ACPAR in Al and Cu Single Crystals Containing Edge Dislocations  
S.Tanigawa, K.Ito, S.Terakado, A.Morisue, S.Fujii and Y.Iwase  
288

C14 The Fermi Surface of Cu-15.0% Ge 5 Phase Alloy by 2D-ACAR Measurements  
M.Hasegawa, K.R.Hoffmann, R.R.Lee and S.Berko  
291

C15 Calculation of 1D and 2D Angular Correlation Curves in Pd and PdH  
Anjali Harmalkar, D.G.Kanhere and R.M.Singru  
294

C16 The New Two-dimensional Angular-Correlation Apparatus at ECN  
man and P.E.Mijnarends  
297

C17 The Development of Two Dimensional Angular Correlation System using a Scintila- 
<illegible> Camera  
Yasuyuki Suzuki and Masao Doyama  
300

C18 Determination of the Quantum Mechanical Density Matrix from Momentum  
Densities  
L.M.Pecora and A.C.Ehrlich  
302

**Section D**

**POSITRON-ATOMIC AND MOLECULAR COLLISIONS**

R4 Positron in Gases - a Theoretical Survey  
A.S.Ghosh and P.S.Grover  
307
**Table of Contents**

R5  Positron and Positronium Atomic Physics  
P.G.Coleman  

D2  Creation of Monoenergetic Positronium in a Gas  
B.L.Brown  

D3  Positronium Bubble and Positron Induced Cluster in Argon  
K.Rytsola, M.Tuomisaari and P. Huotajarvi  

D4  Ionisation of Helium by Positron Impact  
D.Fromme, W.Raith and G.Sinapius  

D5  Positron-impact Ionization of Helium Atom  
M.Basu, P.S.Mazumdar and A.S.Ghosh  

D6  Quantum-kinetic Theory of Light Particle Localization in Simple Fluids  
Bruce N.Miller  

D7  Measurements of Total Ionization Cross Sections for Positrons  

D8  Partial Cross Sections for Positron-atom Scattering  
P.G.Coleman, L.S.Fornari and L.M.Diana  

D9  Stability Limit for Self-trapped States of Light Particles in Fluids  
J.M.Kowalski, J.L.Fry and S.C.Sharma  

D10  Problems with an Application of the Simple Model of Ps-induced Cavities to  
o-Ps Annihilation Rates in Ethane Gas  
Suresh C.Sharma and Eric M.Juengerma  

D11  Effects of Density and Electric Field on Positron Annihilation in Methane Gas  
Suresh C.Sharma, Sean D.Hyatt, Michail H.Ward, Charles A.Dark and L.M.Diana  

D12  Pressure and Temperature Dependences of o-Ps Annihilation Rates in Ethane  
Suresh C.Sharma and Eric M.Juengerman  

D13  A Study of Positron Diffusion and Annihilation in Gases  

D14  Measurement of Inelastic and Elastic Cross Sections in \( \text{H}_2 \)  
B.L.Brown  

D17  Elastic Scattering of Positrons by Helium Atom  
R.S.Pundir, S.Saxena and K.C.Mathur  

D18  Triplet-triplet Excitation of Helium by Positron Impact  
S.Saxena, R.S.Pundir, G.P.Gupta and K.C.Mathur  

D19  Studies on Inelastic and Super Elastic Scattering of Positrons by Hydrogen and  
Helium Atoms  
N.S.Rao and H.S. Desai  

D20  Computer-aided Study of Positron Annihilation in Atomic Hydrogen  
K.V.Sinha and P.S.Grover  

D21  Simulation of Positron-annihilation in Helium and Atomic Hydrogen Mixtures  
K.V.Sinha and P.S.Grover  

D23  Simulation of Positron Drift and Diffusion in Argon in the Presence of Crossed  
Steady Electric and Magnetic Fields  
P.S.Grover, K.V.Sinha and V.Singh  

D24  Positron Distribution for Positron-gas System Irradiated by Large Amplitude  
Electromagnetic Wave  
D.Aggarwal and M.P.Srivastava
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Elastic $e^\pm$-Kr Scattering</td>
<td>D.Basu, S.Dutta, Pritikana Khan and A.S.Ghosh</td>
<td>385</td>
</tr>
<tr>
<td>26</td>
<td>Elastic $e^\pm$-Ar Scattering with the use of the Model-potential Method</td>
<td>S.K.Datta, S.K.Mandal, P.Khan and A.S.Ghosh</td>
<td>387</td>
</tr>
<tr>
<td>28</td>
<td>Ionization Cross Section in $e^+$-H Scattering</td>
<td>A.S.Ghosh, P.S.Mazumdar and Madhumita Basu</td>
<td>390</td>
</tr>
<tr>
<td>29</td>
<td>Vibrational Excitation of Hydrogen Molecule by Positron Impact</td>
<td>Sukanya Sur and A.S.Ghosh</td>
<td>393</td>
</tr>
<tr>
<td>30</td>
<td>Positron Impact Ionization of Atomic Hydrogen by Faddeev Approach</td>
<td>P.Mandal, K.Roy and N.C.Sil</td>
<td>395</td>
</tr>
<tr>
<td>31</td>
<td>Positron Excitation of the $2^1S$ and $2^1P$ States of Helium in Distorted Wave Approximation</td>
<td>Mukesh Kumar, R.Srivastava and A.N.Tripathi</td>
<td>398</td>
</tr>
<tr>
<td>32</td>
<td>Lepton and Anti-lepton Scattering from Hydrogen Atom - a Field Theoretic Approach</td>
<td>Sujata Bhattacharyya, Lali Chatterjee and Keka Basu Chaudhury</td>
<td>400</td>
</tr>
<tr>
<td>33</td>
<td>Empirical Correlation Potential for Positron-H/He Elastic Scattering</td>
<td>S.W.Chiu and D.M.Schrader</td>
<td>403</td>
</tr>
<tr>
<td>34</td>
<td>Transition of Mean Field Behaviour of a Quantum Particle in a Classical Gas</td>
<td>B.N.Miller, H.Lehtihet, J.M.Kowalski and S.C.Sharma</td>
<td>406</td>
</tr>
<tr>
<td>35</td>
<td>The Chemical Stability of Positronic and Muonic Complexes with Atoms and Molecules</td>
<td>R.Wedlich, M.W.Karl, H.Nakanishi and D.M.Schrader</td>
<td>408</td>
</tr>
<tr>
<td>36</td>
<td>Positronium Formation in Helium</td>
<td>Ali H.Moussa and I.Nasser</td>
<td>410</td>
</tr>
<tr>
<td>39</td>
<td>Positronium Formation in Positron-lithium-atom Collisions</td>
<td>Sultana N.Nahar and J.M.Wadhera</td>
<td>413</td>
</tr>
<tr>
<td>40</td>
<td>Elastic Scattering of Positrons by Alkali Atoms</td>
<td>Arunima Mukherjee and D.P. Sural</td>
<td>416</td>
</tr>
<tr>
<td>41</td>
<td>Continuous Slowing Down Approximation Range of 50 KeV to 1000 MeV Positrons</td>
<td>P.B.Pal, S.K.Gupta, V.P.Varshney and D.K.Gupta</td>
<td>418</td>
</tr>
<tr>
<td>42</td>
<td>Some Mechanisms of Formation and Annihilation Decay of Positron Bound States in a Substance</td>
<td>P.U.Arifov and A.A.Paiziev</td>
<td>421</td>
</tr>
<tr>
<td>43</td>
<td>Diagnostic of Rapid Processes by Electron-positron Annihilation</td>
<td>P.U.Arifov and A.V.Schevchenko</td>
<td>423</td>
</tr>
<tr>
<td>44</td>
<td>Calculating Experiment: Scattering and Positron Annihilation in Inert Gases</td>
<td>P.U.Arifov and G.I.Zhiravleva</td>
<td>425</td>
</tr>
</tbody>
</table>
Table of Contents

Section E
DEFECTS IN METALS

L1 Round Table Discussion on "Defects in Solids - Present Status and Future Prospects"

E1 A High Resolution Lifetime Study of Positron Trapping by Vacancies in Copper and Silver
W.Luhr-Tanck, Th. Kurschat and Th. Hehenkamp 451

E2 Thermal Equilibrium Vacancies in the Noble Metals Cu, Ag and Au Investigated by Positron Lifetime Spectroscopy
Wolfgang Stuck and Hans-Eckhardt Schaefer 454

E3 Positron Annihilation in the Presence of Diffusion-influenced Trapping and Detrapping Reactions
W.Meyberg, M.Frank, U.Gosele and A.Seeger 458

E4 Determination of the Vacancy Formation Enthalpy in Chromium by Positron Annihilation

E5 Vacancies in Thermal Equilibrium in Nb
B.Nielsen, K.G.Lynn, J.Hurst, A.Vehanen and P.J.Schultz 464

E6 Positron Annihilation Study of Crystal Defect Developed in Pure Polycrystalline Ni Metal During Cyclic Deformation
Wang Shu-Ying, Ji Guo-Kun, Hou Yao-Yong and Li Li 467

E7 Thermal Annealing of Proton and Electron Irradiated Tungsten Observed with Positron Annihilation
J.de Vries, A. van Veen, A.P. de Lima and W. Lourens 470

E8 Helium Bubbles in 600 MeV Proton Irradiated Aluminium Studied by Positron Annihilation
K.O.Jensen, B.N.Singh, M.Eldrup, M.Victoria and W.V.Green 473

E9 Post-irradiation Annealing of Alpha-induced Defects in Molybdenum: Metal Surface Effect and Ps Formation in Voids.
S.V.Naidu, A.Sen Gupta, R.Roy and P.Sen 476

E10 Positron Annihilation Studies of Neutron Irradiated Reactor Steels
C.Lopes Gil, G.Kogel, P.Sperr and W.Triftshauer 479

E11 Hydrogen in Electron- and Neutron Irradiated Iron
H.E.Hansen, H.K.Nielsen, B.Nielsen, M.D.Bentzon, S.Linderoth and K.Petersen 482

E12 Temperature Dependence of Positron Trapping by Vacancies, Loops and Voids in Molybdenum
M.D.Bentzon, S.Linderoth and K.Petersen 485

E13 Temperature Dependence of Positron Trapping by Hydrogen Contaminated Voids in Molybdenum
M.D.Bentzon, S.Linderoth and K.Petersen 488

E14 Isochronal Annealing of Pure and Nitrogen Doped Neutron Irradiated Molybdenum
M.D.Bentzon, H.K.Nielsen, B.Nielsen, N.J.Pedersen and K.Petersen 491

E15 Temperature-Dependence of Positron Trapping Rates in Defected Aluminium
S.Linderoth, M.D.Bentzon, H.E.Hansen and K.Petersen 494

E16 Hydrogen in Neutron-irradiated Molybdenum
B.Nielsen, H.E.Hansen, H.K.Nielsen, M.D.Bentzon and K.Petersen 497
Table of Contents

E20 Annealing Behaviour of Defects Induced by Alpha-particles in Niobium Specimens
S.V.Naidu, A.Sen Gupta and P.Sen
500

E21 Positron Annihilation Studies of Stainless-steel Irradiated with Nitrogen and Argon Ions
A.S.Mahajan, S.Subburaj, D.C.Kothari and V.Manohar
503

E22 Positron Annihilation Studies of Copper and Nickel Containing High Concentrations of Krypton
K.O.Jensen, M. Eldrup and J.H.Evans
506

E23 Positron Lifetime and Doppler-broadening Studies of Vacancy Formation and Phase Transformation in Uranium
P.Sperr, G.Kogel and W.Triftshauser.
509

E24 Helium in Aluminium from 20 to 930 K
H.E.Hansen, H.Rajainmaki, R.M.Nieminen, S.Linderoth and K.Petersen
512

E25 Defect Annealing at 20-700 K in Mo and Ni Irradiated with Protons at 15 K.
H.E.Hansen, H. Rajainmaki and R.M.Nieminen
515

E26 Vacancy Recovery in Irradiated Niobium and Tantalum
P.Hautojarvi, H.Huomo, A.Vehanen and F.Plazaola
518

E27 Temperature Dependence of Positron Lifetime Spectra in Electron Irradiated Zn
N. de Diego, C.Hidalgo and F.Plazoala
521

E28 Positron Lifetime in Irradiated Iron and Gold Dilute Alloys
C.Corbel, P.Moser and P.Hautojarvi
524

E29 A Study of the Prevacancy Effect of Positrons in Low-melting Metals
P.Mascher and W.Puff
527

E30 Positron Annihilation Parameters in In
M.Chardalas, S.Dedousis and Stefan Charalambous
530

E31 Impurity Induced Vacancy Clustering in Nickel
G.Dubek, T.Gorecki and O.Brummer
532

E32 Evidence for Detrapping of Positrons in Cadmium at Low Temperatures
P.C.Rice-Evans, A.A. Berry and D.Briton
533

E33 On the Temperature Dependence of Positron Lifetimes in Thallium
W.Puff, P.Mascher and H.Sormann
537

E35 Positron Lifetimes at the Vacancy-impurity Centres in Aluminium
S.Sankar and K.Iyakutti
540

E36 Hydrogen Defect Interactions in Tungsten Observed with PA
543

E37 A Positron Annihilation Doppler Broadening Study of Niobium
546

E38 PAS Determination of the Vacancy Formation Enthalpy in Tungsten
L.C.Smedskjaer, M.K.Chason and R.W.Siegel
549

E39 Methane-bubble Formation in Hydrogen-charged Fe-30 ppm C
C.L.Snead,Jr., K.G.Lynn and M.Suenaga.
552

E42 Positron Annihilation Study of the Annealing Behaviour of Defects in Cold-worked Molybdenum
C.S.Sundar, A.Bharathi and K.P.Gopinathan
555
Table of Contents

E43 Positron Annihilation Investigations of the Interaction of Hydrogen Atoms with Defects in Plastically Deformed Ni
J.Pajak and B.Rozenfeld 558

E44 Positron Trapping in Deformation-induced Defects in Bismuth
I.Lemahieu, M.Dorikens, L.Dorikens-Vanpraet and D.Segers 561

E45 Positron Annihilation in Deformed Polycrystalline Aluminium
D.Segers, M.Dorikens and L.Dorikens-Vanpraet 564

E46 On the Discrepancy Between Various Determinations of the Monovacancy Formation Enthalpy in Indium
I.Lemahieu, D.Segers, M.Dorikens and L.Dorikens-Vanpraet 567

E47 Migration of Diavacancies and the Initial Formation Process of Small Vacancy Clusters in Pure Aluminium
I.Kanazawa, H.Murakami, T.Kurihara, Y.Sakurai and M.Doyama 570

E50 Characterization of Lattice Defects Generated During Fatigue Cycling of Nickel
Toni L.Grobstein, Gerhard E.Welsch, Nokul Panigrahi and John D. McGervey 573

E51 Calculated Positron Lifetime in Vacancy Clusters
C.Corbel, M.J.Puska and R.M.Nieminen 576

E52 Positron Trapping in Cyclically Deformed Copper
L.Diaz, R.Pareja, R.Gonzalez and M.A.Pedrosa 579

E53 The Investigation of the Interaction Between Hydrogen and Defects in Iron by Positron Annihilation
Bi-Song Cao, Wei-zhong Yu, Bing-Lin Gu and Jai-jiong Xiong 582

E54 Positron Lifetime Spectroscopy with $\beta^+-\gamma$ and $\gamma-\gamma$ Coincidences on Indium
Hans-Eckhardt Schaefer and Wolfgang Weiler 584

E55 Determination of Edge and Screw Dislocation Density in Single Crystals of High Purity Iron
Yong-ki Park, James T.Waber and C.L.Snead,Jr. 586

E56 Reduction of the Trapping of Positrons in Dislocated Single Crystal of Iron when Charged with Hydrogen
Yong-ki Park, James T.Waber and C.Lewis Snead,Jr. 589

E57 Positron Trapping and Annihilation and Peierls-Nabarro Dislocation Core Model
J.Q.Shen, C.W. Lung and K.L.Wang 592

E58 Positron Trapping at Grain Boundaries

Section F
PHASE TRANSITIONS

F2 A Study of Charge Density Wave Phase Transition in 2H-NbSe$_2$ by means of Positron Annihilation Technique

F3 The Investigation of Order Disorder Transformation in Ni$_3$Fe and Ni$_3$(Fe,Nb) Alloys by Positron Annihilation
Amdulla O.O.Mekhrabov, M.Doyama, M.Shimotomai and E.Sato 602

F4 A Positron Lifetime Study of the Phase Transition in Tin
W.Puff, P.Mascher, P.Kindl and H.Sormann 605
Table of Contents

F5 On Phase Transitions in Tin
P.C.Rice-Evans, M.Mussavi-Madani and F.A.R.El Khangi 608

F6 Positron Annihilation Study of Defect in Martensitic Transformation of Fe-Ni Alloy
He Yongshu, Huang Maorong, Wan Xinzhu, Ma Ruzhang and Yu Enhua 611

F8 Detection of Two Phase Transitions in CoSiF$_6$H$_2$O by Positron Lifetime Measurements
A.Ghoshray, K.Roy, M.Bose, S.V.Naidu, A.Sen Gupta and P.Sen 614

F9 The CDW Transition in Tantalum Di Chalcogenides Observed by Positron Annihilation
E.Sato, K.Ohtake, R.Yamamoto, M.Doyama and K.Endo 617

F10 Phase Transitions and Positronium Formation and Lifetime in Sulpholan
J.Ch.Abbe, G.Duplatre and J.C.Machado 620

F11 Positronium and Phase Transition in Phenanthrene
J.Wawrysyczuk, R.Wasiewicz, C.Rybka, W.Gorniak and T.Goworek 623

F12 A Study of the Glass Transition in Cholesteryl Hydrogen Phthalate
William W.Walker 626

F13 Surfactant Vesicles Studied by Positron Annihilation Techniques
S.Millan, R.Reynoso, J.Serrano and L.A.Fucugauchi 628

F14 Lyotropic Liquid Crystals Studied by Positron Annihilation Techniques
S.Millan, G.Sanchez and L.A.Fucugauchi 631

F15 Phase Transition Studies in p-Cyanophenyl p'-n-Heptylbenzoate
P.C.Jain and S.R.S.Kafle 634

F16 Phase Transition Studies in Mixtures of Some Liquid Crystalline Materials
P.C.Jain, S.D.Chauhan and S.R.S.Kafle 637

Section G
NON-METALS

R7 Positrons and Positronium in Non-metalltic Solids
Toshio Hyodo 643

R8 How Positrons Move: a Review of the Positron-phonon Interaction and Positron Diffusion
T.McMullen 657

G1 Positron Lifetime Studies on Physisorbed Graphite Surfaces
C.Yu, N.Zhou and Y.C.Jean 669

G2 Search for a Monolayer Surface of Oxygen on Exfoliated Graphite at Low Temperatures
P.C.Rice-Evans, M.Mussavi-Madani, K.U.Rao and B.P.Cowan 672

G3 Positron Annihilation in Graphite-potassium Intercalation Compounds Absorbing Hydrogen
H.Murakami, M.Sano, I.Kanazawa, T.Enoki, T.Kurihara, Y.Sakurai and H.Inokuchi 673

G4 Temperature Dependent Positron Localization in Potassium Intercalated Graphite
E.Cartier, F.Heinrich, V.Geiser and H.J.Guntherodt 678

G5 Positron Annihilation in One-dimensional Charge-density Wave System (TaSe$_4$)$_2$I
Table of Contents

G6 Study of Defects in GaAs by Positron Lifetime
G.Dlubek, F.Plazaola, J.Makinen, P.Hautojarvi and O.Brummer 684

G7 The Study of Vacancy in Doped Piezoelectric Ceramics of PbZrO₃-PbTiO₃ and PbTiO₃ Systems
Yuanjin He, Weizong Yu, Jianjiong Xiong and Longtu Li 687

G8 A Positron Lifetime Study of Aging in Polystyrene
J.McGervey, N.Panigrahi, R.Simha and A.Jamieson 690

G10 Positron Annihilation in Liquid Crystalline Materials
P.C.Jain 692

G11 Positron Annihilation and Magnetic Susceptibility Measurements on Annealed Fast Neutron Irradiated Crystalline Quartz
J.P.Mbunyu-Tsumbu 696

G13 Positron Annihilation in Dispersed Oxide CuO-Al₂O₃ and CoO-Al₂O₃
A.Z.Ilyasov and A.V.Mikhailin 699

G14 Positron Annihilation in the Fast Ionic Conductor Li₃N
H.E.Hansen, S.Linderoth, S.Skaabup, M.D.Bentzon and K.Petersen 702

G15 Positron Annihilation Study of Organic Conductors
Wang Yun Yu, Zhou Guang Ming and Zhu Dao Ben 705

G16 Positron Lifetime in Doped and Undoped MgO Crystals
R.Pareja, M.A.Pedrosa and R.Gonzalez 708

G18 The Positron Annihilation in GaAs Containing Defects
A.Uedono, Y.Iwase and S.Tanigawa 711

G19 Positron Annihilation in GaAs
M.Stucky, R.Paulin, B.Geffroy, C.Corbel and J.Suski 714

G20 Some Results on Positron Diffusion in Si
B.Nielsen, K.G.Lynn, A.Vehanen and P.J.Schultz 717

G21 Recovery of Neutron-irradiated High Purity Si
C.L.Snead, Jr. and K.G.Lynn 720

G22 Low Temperature Positron Lifetimes and Doppler Broadening Measurements for Single Crystal Nickel Oxide Containing Cation Vacancies
James T.Waber, C.L.Snead, Jr. and K.G.Lynn 723

G23 Directional Compton Profile and Doppler-broadened Positron Annihilation Line-shape Studies of GaP

G24 The Study of the Defects in GaAs by Positron Annihilation
Xiong Xing-Min 730

G25 Positron Trapping in Heavily Irradiated Semiconductor
P.Moser, J.L.Pautrat, C.Corbel and P.Hautojarvi 733

G26 Study of Isochronal Annealing Behaviour of Neutron Irradiated Hydrogen FZ Silicon by Positron Annihilation
Xiong Xing-Min 736

G28 Positron Annihilation Studies in Alpha Irradiated n-type GaAs
A.Sen Gupta, S.V.Naidu and P.Sen 739

G30 Positron and Positronium States in Neutron Irradiated 6H-SiC
V.N.Brudnyi, A.D.Pogrebnyak, V.T.Toletaev and S.B.Nurnagambetov 742
Table of Contents

G32 Positron Annihilation Study of the Defects and Microvoids in A-Si and A-Si:H Films
Jia-jiong Xiong, Bi-song Cao, Wei-zhong Yu, Ai-lien Jung, Yi-hua Wang, Gang Liu and David Adler 744

G33 Positronium Dynamics in Solids
A.Z.Varisov 746

G34 Study of Defects and Microheterogeneity of Chalcogenide Glassy Semiconductors
V.P.Shantarovich and B.V.Kobrin 748

G35 Positron Annihilation in the Semiconducting Alloy Pb_{0.93}Ge_{0.07}Te
P.C.Rice-Evans, K.U.Rao, M.Mussavi-Madani, He Yusheng and A.D.C.Grassie 751

G36 Study of Grown-in Defects in InP by the Positron Labelling Technique and Variable Energy Positron Beam
Y.Iwase, A.Uedono and S.Tanigawa 753

G38 The Trapping Model with Time Dependent Rate Constant - Positron Trapping on Ions in Water
O.E.Mogensen, M.Eldrup and N.J.Pedersen 756

G39 Positron Annihilation Parameters in BGO

G40 Positron Annihilation Study in NaCl
Sp.Dedousis, M.Chardalas and Stef.Charalambous 760

G41 Temperature Effects in Positron Annihilation in NaCl
Sp.Dedousis, M.Chardalas and Stef.Charalambous 763

G42 The Study of Color Centers in the Irradiated LiF Crystal
Peng Yuqing, Zheng Wanhui, Zhang Yiping, Bao Yuhong and Li Shenghua 765

G43 Positron Annihilation in Alkali Halides at Low Temperatures
H.Rajainmaki, S.Linderoth, R.M.Nieminen, K.Loberg and H.E.Hansen 767

G44 Positron Diffusion in Alkali Halides
S.B.Nurmagambetov 770

G45 Positron Annihilation Studies in Mixed Crystals of KCl_{1-x}Br_{x}

G46 Positronium in MgF_{2}
M.Kakimoto, T.Hyodo and K.Fujiwara 776

G47 Positronium Momentum Distribution in Alkali Halides
J.Kasai, T.Hyodo and K.Fujiwara 779

G49 Temperature Dependence of Momentum Distribution of Delocalized Positronium in Insulating Crystals
O.V.Boev and K.P.Arefiev 782

G50 Positron Lifetime Studies of PVC Doped with Cholesteryl Acetate
S.Subburaj, A.S.Mahajan and U.D.Deshpande 783

G51 Development of Positron Diagnostic of Elastomers
P.U.Arifov, S.N.Vasserman and S.A.Tishin 787

G52 Detection of Glass Transition and Crystallization in Polyethylene Terephthalate by Positron Annihilation
Bi-Song Cao, Wei-zhong Yu and Duan-fu Xu 790

G54 Positron Lifetime Measurements in Branched Polyethylene
P.Kindl, H.Sormann and W.Puff 793
G56  Positron Annihilation in Lattice of as-Grown Float-zone Silicon Crystals  

Table of Contents  

Section H  
ADVANCES IN TECHNIQUES  

H1  High Intensity Positron Beam and Angular Correlation Experiments at Livermore  
   R.H. Howell, M.J. Fluss, I.J. Rosenberg and P. Meyer  

H3  Application of BaF₂ Scintillators for Positron Lifetime Measurements  
   W. Bauer, J. Major, W. Weiler, K. Maier and H.E. Schaefer  

H4  Multi 3 Photon Spectroscopy Sum Energy Analyser  

H6  The HISPET Project: State of the Art  
   A. Del Guerra, G. K. Lum, V. Perez-Mendez and G. Schwartz  

H9  The Fourier Transform Method for the Analysis of Positron Lifetime Spectra  
   Yuan-jin He and Bi-song Cao  

H10 Analysis of Positron Annihilation Lifetime Data in a Condensed Medium  
    F.H. Hsu and C.S. Parengkuan  

H12 Ultra Stable Pulse Generator for Zero and Gain Stabilization of an ADC  
    M. Dorikens, K. Van den Bossche, L. Dorikens-Vanpraet, D. Segers and I. Lemahieu  

H13 A Determination of the Source Correction and Back Scattering in Positron Lifetime Spectroscopy  
    D. M. Schrader, S. W. Chiu, H. Nakanishi and S. Rochanakij  

H16 Microprocessor Controlled High Density Multewire Proportional Chambers for Two Dimensional Angular Correlation of Positron Annihilation  
    V. V. Nagarkar, T. K. Balwe and S. K. David  

H17 Annihilation Data Base Formation  
    P. U. Arifov, Z. R. Abdurasulev, G. I. Zhuravleva and V. M. Malyan  

H18 Positron Mobility in Some Liquid Hydrocarbons  

H19 Positron Age-momentum Correlation Measurement on Water  
    S. Linderoth and I. K. MacKenzie  

H21 Sub-surface Defects Studied by Variable Energy Positrons  
    B. Neilsen, A. van Veen and K. G. Lynn  

H23 The 128 BGO Detector 2D-Angular Correlation Apparatus at University of Tsukuba  
    S. Tanigawa, R. Suzuki and Y. Jwase  

H25 Use of EGS for Monte Carlo Calculations in Positron Imaging  
    A. Del Guerra, M. Conti and W. R. Nelson  

H27 Bio-membrane Studied by Positronium Atoms  
    Y. C. Jean and Y. Y. Wang  

H28 Reliability Tests of the Multicomponent Analysis of Positron Lifetime Spectra  
    H. Sormann, P. Kindl and W. Puff
Section 3  
DEFECTS IN ALLOYS AND AMORPHOUS ALLOYS

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>Vacancy-solute Interaction in Irradiated Dilute Iron Alloys - Comparison Between Positron Lifetimes and HSR Measurements</td>
<td>C. Corbel, A. Moslang, P. Moser, P. Hautojarvi and A. Weidinger</td>
<td>853</td>
</tr>
<tr>
<td>32</td>
<td>Positron Annihilation and Vacancy-impurity Binding in α-FCC Alloys</td>
<td>Th. Hehenkamp</td>
<td>856</td>
</tr>
<tr>
<td>33</td>
<td>Theory of Positron Annihilation in Vacancies in Concentrated Disordered Alloys</td>
<td>R. Prasad, R. Benedek and A. Bansil</td>
<td>859</td>
</tr>
<tr>
<td>34</td>
<td>Annealing Behaviour of Defects in n-Irradiated Copper-Boron Studied by Positron Annihilation</td>
<td>B. Viswanathan, G. Amarendra and K. P. Gopinathan</td>
<td>862</td>
</tr>
<tr>
<td>35</td>
<td>The Temperature Dependence of a Positron Trapping Effect in Glassy Metals</td>
<td>A. Uedono, Y. Iwase and S. Tanigawa</td>
<td>865</td>
</tr>
<tr>
<td>36</td>
<td>Defects in Helium Implanted Metals Studied by Monoenergetic Positron Beam</td>
<td>Y. Iwase, A. Uedono, S. Tanigawa and H. Sakairi</td>
<td>868</td>
</tr>
<tr>
<td>37</td>
<td>Formation and Growth of Vacancy Type Clusters in Quenched Aluminium Dilute Alloys Studied by Positron Annihilation</td>
<td>I. Kanazawa, H. Murakami, T. Kurihara, Y. Sakurai and M. Doyama</td>
<td>871</td>
</tr>
<tr>
<td>38</td>
<td>A Positron Annihilation Study of Ageing in Aluminium Alloy</td>
<td>W. Triftshauser and G. Kogel</td>
<td>874</td>
</tr>
<tr>
<td>39</td>
<td>Study of Defects in Stainless Steel 316 by Positron Annihilation</td>
<td>C. Lopez-Gil, P. Sperr, G. Kogel and W. Triftshauser</td>
<td>877</td>
</tr>
<tr>
<td>41</td>
<td>Classification of Positron Traps in Age-hardenable Alloys</td>
<td>G. Dlubek, O. Brummer and R. Krause</td>
<td>883</td>
</tr>
<tr>
<td>42</td>
<td>Precision Experiments on the Divacancy Effect in Dilute Al Alloys</td>
<td>S. Tanigawa, K. Ito, A. Morisue, A. Uedono, Y. Iwase and S. Fujii</td>
<td>886</td>
</tr>
<tr>
<td>43</td>
<td>Positron Lifetime Study of Secondary-defect Formation in Quenched Al</td>
<td>Cs. Széles, Zs. Kajcsos and A. Vertes</td>
<td>889</td>
</tr>
<tr>
<td>44</td>
<td>Positron Lifetime Study of Constitutional and Thermal Defects in PdIn Alloys</td>
<td>H. Hahn, M. Ghafari, A. Balogh and I. Dezsi</td>
<td>892</td>
</tr>
<tr>
<td>45</td>
<td>Positron Trapping at Structural Vacancies in NiAl</td>
<td>St. Chabik and B. Rozenfeld</td>
<td>894</td>
</tr>
<tr>
<td>46</td>
<td>The Study of Hydrogen Damage of Fe-Ni-Co Alloy</td>
<td>Wei-zhong Yu, Bi-song Cao, Jia-Jiong Xiong, Ju-sheng Ma, Hong-jiang Shi, Zu-fang Chen and Xiang-Yung Tang</td>
<td>896</td>
</tr>
<tr>
<td>47</td>
<td>Vacancy Formation Energies in Disordered Alloys</td>
<td>S. M. Kim</td>
<td>899</td>
</tr>
<tr>
<td>49</td>
<td>Ordering and Annealing of Quenched Cu&lt;sub&gt;3&lt;/sub&gt;-Au</td>
<td>M. Doyama, P. Moser and J. Hillairet</td>
<td>906</td>
</tr>
</tbody>
</table>
Table of Contents

J23 The Recovery of Quenched, Cold-worked Al-Hf Dilute Alloy Studied by PAC and Positron Annihilation
Y. Sakurai, T. Kurihara, I. Kanazawa, H. Murakami and T. Iwashita 909

J24 Positron Trapping Mechanisms in a Fine-grained Alloy
C. Hidalgo, N. de Diego and F. Plazaola 912

J25 Different Temperature Dependence of Positron Annihilation in Metal-metal and Metal-metalloid Amorphous Alloys
E. Cartier, F. Heinrich, A. Schiltz, U. Gubler and H. J. Guntherodt 915

J26 Magnetic After Effect and Positron Lifetimes in a Metallic Glass
P. Allia, A. Dupasquier, A. Ferro, G. P. Soardo, F. Vinai and L. Y. Xiong 918

J27 Imperfection Structure of Metallic Glasses Studied by Positron Annihilation

J29 Positron Annihilation Study of Structural Relaxation and Crystallization of Amorphous Alloys
Wang Shao Jie, Xu Yin-Hua, Tang Zhong-Xun and Tian De-Cheng 924

J30 Study of Structural Relaxation in Sputtered Amorphous Gd-Fe Film by Positron Lifetime Measurements
M. Imafuji, R. Yamamoto and M. Doi yama 927

J31 Positron Annihilation in Amorphous Alloys
I. Ya. Dekhtyar, E. G. Madatova and Ch. Abrayev 930

J32 Positron Lifetime in Amorphous Structures: As_{50-50} Ge_{50}-Se_{50}
Maya Singh, V. K. Vijay, I. P. Jain, R. Chandra and Y. S. Shishodia 933

J33 On the Depth-distribution of Positron Traps in Metallic Glasses
Zs. Kajcsos, R. Paulin, F. Boileau, A. Lovas, L. Marczis and A. Ashry 935

Section K
SURFACES AND POSITRON BEAMS

R9 Positronium at Surfaces
P. M. Platzman and N. Tzoar 941

K1 Scattering Processes for Low Energy Positron-surface Interaction
D. Neilson, R. M. Nieminen and J. Szymanski 948

K2 2D ACAR Momentum Density Study of the Nature of the Positron Surface State on Al (110)

K3 Defect Profile Measurements in Ar^+ Sputtered Aluminium with a Variable-energy Positron Beam
A. Vehanen, J. Makinen, P. Hautajarvi and P. Huttunen 954

K4 A Pulsed Positron Beam for Lifetime Studies
D. Schollbauer, P. Sperr, G. Kogel and W. Triftshauer 957

K5 Positron Diffraction at Metal Surfaces for Very Low Energies
P. J. Jennings and D. Neilson 960

K6 An Experimental Method for Measuring Positronium Reflection from Surfaces
## Table of Contents

| K7 | Positron Annihilation in Defects at Crystal Surface | I.Ya.Dekhtyar and S.G.Sakharova | 963 |
| K8 | The Reconstruction of Defect Distributions Close to the Surface from Data Obtained by Slow Positrons | G.Kogel | 965 |
| K9 | Positron Annihilation at Metal Surfaces | S.B.Shrivastava and K.S.Bhadauria | 968 |
| K10 | Studies of Catalyst Surfaces by Positron Annihilation | X.L.Lo, K.L.Cheng and Y.C.Jean | 971 |
| K11 | Kinetic Energy of Positronium Emitted from SiO₂ (Silicaerogel) Surface | T.B.Chang, J.K.Deng, T.Akahane, T.Chiba, M.Kakimoto and T.Hyodo | 974 |
| K12 | Application of the Variable Energy Positron Beam to the Study of Si/SiO₂ Interface | Y.Iwase, A.Uedono and S.Tanigawa | 977 |
| K13 | Positron Studies of Adsorption on Silica Supported Metallic Iron Microcrystals | O.E.Mogensen, M.Eldrup, S.Morup, J.W.Ornbo and H.Topsoe | 980 |
| K14 | The UEA Positron Beam Surface Spectrometer | S.M.Hutchins, P.G.Coleman, A.Alam and R.N.West | 983 |
| K15 | Design for a New Low Energy Positron Beam for Surface Studies | Alex Weiss | 986 |
| K16 | An UHV Magnetically Confined 0-40 keV Slow Positron Beam Facility | A.Vehanen, J.Lahtinen, H.Huomo, J.Makinen, K.Rytsola and P.Hautojarvi | 989 |
| K20 | The Possibility to Enhance Reemission of Positrons being Secondarily Moderated | M.Debowska, R.Ewertowski and W.Swiatkowski | 999 |

### Section N

#### POSITRON ASTROPHYSICS

| N1 | A Decade of Variable Positron Annihilation Radiation from the Centre of the Milky Way | M.Leventhal and C.J.MacCallum | 1003 |
| N2 | Positron Annihilation in an Experimentally Simulated Low Density Galactic Environment | B.L.Brown, M.Leventhal and A.P.Mills,Jr. | 1014 |
| N3 | Ps Annihilation and Gamma-ray Burst Events in Astrophysics | H.L.Duroah, K.Duroah, A.Chetis, I.Bordoloi, L.M.Singh and S.Chakravarty | 1017 |
| N4 | Studies on Pair Formation in Neutron Star Magnetosphere | H.L.Duroah, K.Duroah and A.Chetis | 1019 |
Table of Contents

SUMMARY OF THE CONFERENCE
A.T. Stewart 1023

Conference Paper Index 1031
Author Index 1033
Subject Index 1039