

Contents

<i>Preface</i>	v
<i>Foreword</i>	vii
†A. SINGLE CRYSTAL SPUTTERING I (theory)	
<i>A computer simulation of monocrystal sputtering in the binary collision approximation</i> (M. T. ROBINSON and I. M. TORRENS)	*
<i>Binding energies in cubic metal surfaces</i> (D. P. JACKSON)	1
<i>Computer simulation of sputtering II</i> (D. E. HARRISON, Jr., W. L. MOORE, Jr. and H. T. HOLCOMBE)	*
<i>Low energy sputtering collision phenomena in the surface of metal single crystals</i> (A. VAN VEEN and J. M. FLUIT)	*
B. SINGLE CRYSTAL SPUTTERING II (experiment)	
<i>Sputtering of single crystals</i> (R. J. McDONALD)	*
<i>Anisotropic emission in single crystal sputtering. Measurements on hcp single crystals</i> (W. O. HOFER)	7
<i>Systematic variation in $\langle 110 \rangle$ spot structure on sputtered ejection patterns from single crystals</i> (L. T. CHADDERTON, A. JOHANSEN, L. SARHOLT-KRISTENSEN, H. SCHUMACHER, S. STEENSTRUP and P. E. HØJLUND)	*
<i>Dependence of the space distribution of particles sputtered from monocrystalline copper on the ion incidence angle</i> (V. M. BUKHANOV, V. G. MOROZOV and V. E. YURASOVA)	15
<i>Study of sputtering and reflection of ions from some high index planes? Approaching plane (001), of CU single crystal</i> (L. B. SHELYAKIN, I. G. BUNIN, V. E. YURASOVA and B. M. MAMAEV)	*
<i>Angular and temperature dependence of sputtering in monocrystalline targets</i> (H. E. ROOSEDAAL and J. J. Ph. ELICH)	*
C. SURFACE AND DEPTH ANALYSIS	
<i>Depth profile measurements by various surface analysis methods combined with sputtering</i> (G. K. WEHNER)	*
<i>A depth analysis of cleaved mica surfaces monitored by AUGER spectroscopy</i> (P. STAIB)	19

† List of papers presented at the conference. Contributions marked with an asterisk are not published in these proceedings.

<i>Implications in the use of secondary ion mass spectrometry to investigate impurity concentration profiles in solids</i> (F. SCHULZ, K. WITTMAACK and J. MAUL)	23
<i>Depth distribution of implanted atoms under the influence of surface erosion and diffusion</i> (J. P. BIRSACK)	29
 D. SPUTTERING OF COMPOUNDS AND ADSORBED LAYERS	
<i>The sputtering of oxides. Part I: A survey of the experimental results</i> (R. KELLY and NGHI Q. LAM)	37
<i>Sputtering patterns of alkali halides under electron irradiation</i> (R. BROWNING)	*
<i>Sputtering of adsorbed material</i> (H. F. WINTERS)	*
 E. POLYCRYSTALLINE SPUTTERING I (theory)	
<i>Energy spectra of atoms sputtered by ion beams</i> (P. SIGMUND)	*
<i>Unified sputtering theory</i> (W. BRANDT and R. LAUBERT)	*
<i>Sputtering and backscattering of keV light ions bombarding random targets</i> (R. WEISSMANN and P. SIGMUND)	47
<i>Contributions of backscattered ions to sputtering yields depending on primary ion energy</i> (R. WEISSMANN and R. BEHRISCH)	55
 F. POLYCRYSTALLINE SPUTTERING II (experiment)	
<i>Sputtering-yield studies on silicon and silver targets</i> (H. H. ANDERSEN and H. L. BAY)	63
<i>The dose dependence of 45-keV V^+ and Bi^+ ion sputtering yield of copper</i> (H. H. ANDERSEN)	71
<i>Variation of the sputtering yield of gold with ion dose</i> (J. S. COLLIGON, C. M. HICKS and A. P. NEOKLEOUS)	77
<i>Influence of the bombarding angle on low energy sputtering of polycrystalline materials</i> (H. OECHSNER)	*
<i>Sputtering yields of niobium by deuterium in the keV range</i> (W. ECKSTEIN, B. M. U. SCHERZER and H. VERBEEK)	85
<i>A novel quantitative method for identifying sputtered neutral species</i> (E. KAY, J. COBURN and E. TAGLAUER)	*
<i>The angular distribution of sputtered copper atoms</i> (W. KRÜGER, K. RÖDELSPERGER and A. SCHARMANN)	*
<i>Mean velocity of particles ejected from various polycrystalline metal surfaces by sputtering with high energetic noble gas ions</i> (W. KRÜGER and A. SCHARMANN)	*
 G. SCATTERING OF IONS I	
<i>Current trends in ion scattering from solid surfaces</i> (E. S. MASHKOVA and V. A. MOLCHANOV)	89

<i>Low energy ion reflection from metal single crystals</i> (A. VAN VEEN)	*
<i>Estimation of ion scattering by atomic chains on single crystal surfaces</i> (S. D. MARCHENKO, E. S. PARILIS and N. Y. TURAYEV)	99
<i>The peculiarities of ion scattering by crystals due to surface halfchannels formed by close packed atomic rows</i> (Yu. G. SKRIPKA)	103
<i>Energy distributions of protons with primary energy of 15 keV backscattered from a Ni single crystal</i> (W. ECKSTEIN, H. G. SCHÄFFLER and H. VERBEEK)	107

H. SCATTERING OF IONS II

<i>Influence of ion bombardment induced radiation damages in the crystal lattice on the angular regularities in ion scattering</i> (U. A. ARIFOV and A. A. ALIYEV)	113
<i>Bombardment induced surface damage in a Nickel single crystal observed by ion scattering and LEED</i> (W. HEILAND and E. TAGLAUER)	117
<i>Accommodation coefficients for low-energy ions on metal surfaces</i> (U. A. ARIFOV, D. D. GRUICH, G. E. ERMAKOV, E. S. PARILIS, N. Y. TURAYEV and F. F. UMAROV)	123
<i>The low angle scattering of 275 KEV He⁺ ions from a tungsten crystal surface</i> (A. D. MARWICK, M. W. THOMPSON, B. W. FARMERY and G. S. HARBINSON)	*
<i>Measurement of the back-scattering of fission fragments from thin metal films</i> (A. VETTER, G. FIEDLER, K. GÜTTNER and H. SCHMIDT)	129
<i>Surface study by application of noble gas ion backscattering technique</i> (K. AKAISHI)	135

I. SECONDARY ION EMISSION I

<i>Theoretical models in secondary ionic emission</i> (P. JOYES)	139
<i>Secondary ion emission of alloys in relation with their electronic structure</i> (G. BLAISE)	147
<i>Influence of temperature on the secondary ion emission of a monocrystalline aluminium target</i> (R. LAURENT and G. SLODZIAN)	153
<i>Influence of channelling on secondary ion emission yields</i> (M. BERNHEIM)	157
<i>Secondary ion yield from tungsten and tungsten oxide as a function of primary ion mass and energy</i> (A. BENNINGHOVEN, C. PLOG and N. TREITZ)	*
<i>Mass spectrum and spatial distribution of secondary ions produced by ion bombardment of solids</i> (V. YURASOVA, A. A. SYSOEV, H. A. SAMSONOV, V. M. BUKHANOV, L. N. NEVZOROVA and L. B. SHEJAKIN)	*
<i>Energy distribution of secondary ions from 15 polycrystalline targets</i> (Z. JURELA)	161
<i>Determination of the negative ion yield of copper sputtered by cesium ions</i> (M. K. ABDULLAYEVA, A. K. AYUKHANOV and U. B. SHAMSIYEV)	167

K. SECONDARY ION EMISSION II (clusters)

<i>Observation of clusters in a sputtering ion source</i> (R. F. K. HERZOG, W. P. POSCHENRIEDER and F. G. SATKIEWICZ)	173
<i>Angular dependence of clusters sputtered from a tungsten single crystal surface</i> (G. STAUDENMAIER)	181
<i>Secondary emission of molecular ions from light-element targets</i> (M. LELEYTER and P. JOYES)	185
<i>Neutral beam sputtering of positive ion clusters from alkali halides</i> (J. RICHARDS and J. C. KELLY)	191
<i>Deflection of sputtered ions by surface charges</i> (J. RICHARDS, R. L. DALGLISH and J. C. KELLY)	195
<i>The influence of channeling of the incident ion on secondary ion emission from single crystals</i>	*
<i>Sputtered atom ejection and radiation damage annealing from elemental and compound semiconductors</i> (E. ZWANGOBANI and R. J. MacDONALD)	*

L. PLASMA SOLID INTERACTION

<i>The wall problem in fusion reactors</i> (R. BEHRISCH and H. VERNICKEL)	*
---	---

M. SURFACE DAMAGE AND TOPOGRAPHY I

<i>Surface damage and topography changes produced during sputtering</i> (R. S. NELSON and D. J. MAZEY)	199
<i>A necessary condition for the appearance of damage-induced surface-topography during particle bombardment</i> (N. HERMANNE)	207
<i>The topography of sputtered semiconductors</i> (I. H. WILSON)	217
<i>Surface damage and topography of erbium metal films implanted with helium to high fluences</i> (R. S. BLEWER)	227
<i>Blistering of polycrystalline and monocrystalline niobium</i> (M. KAMINSKY and S. K. DAS)	233
<i>Blistering of molybdenum under helium ion bombardment</i> (S. K. ERENTS and G. M. McCracken)	239

N. SURFACE DAMAGE AND TOPOGRAPHY II

<i>Thermal evolution spectrometry of low energy inert gas ions injected into Cu, UO₂ and glass</i> (A. O. R. CAVALERU, C. M. MORLEY, D. G. ARMOUR and G. CARTER)	247
<i>Secondary electron emission and radiation damage in Ge</i> (G. HOLMÉN and P. HÖGBERG)	*
<i>Radiation damage, annealing and thermal desorption in UO₂ induced by low energy A⁺ ion bombardment</i> (B. NAVINSEK and V. KRASEVEC)	*

<i>Optical properties of ion bombarded silica glass</i> (A. R. BAYLY)	255
<i>Dose regularities under ion bombardment of solids</i> (E. S. MASHKOVA and V. A. MOLCHANOV)	263
O. PHOTON EMISSION BY ION BOMBARDMENT	
<i>Photon emission from low-energy ion and neutral bombardment of solids</i> (N. H. TOLK, D. L. SIMMS, E. B. FOLEY and C. W. WHITE)	265
<i>Photon-emission induced by impact of fast ions on metal surfaces</i> (C. B. KERKDIJK and E. W. THOMAS)	275
<i>Time decay of ion bombardment induced photon emission</i> (J. G. MARTEL and N. T. OLSON)	279
P. SECONDARY ELECTRON EMISSION	
<i>Angular and energetic distributions of secondary electrons emitted by solid targets under ionic bombardment</i> (N. COLOMBIE, C. BENAZETH, J. MISCHLER and L. VIEL)	283
<i>Auger electron emission by ion bombardment of light metals</i> (J. F. HENNEQUIN and P. VIARIS DE LESEGNO)	*
<i>Estimation of electron potential emission yield dependence on metal and ion parameters</i> (L. M. KISHINEVSKY)	289
<i>Dependence of inelastic energy loss on the atomic numbers of the ions</i> (B. E. BAKLITSKY, E. S. PARILIS and V. K. FERLEGER)	295
<i>Energy spectrum of electrons emitted by alkali halide crystals under impact of ion and atom bombardment</i> (U. A. ARIFOV, S. GAPOV and R. R. RAKHIMOV)	301
Q. SECONDARY ION EMISSION III (application)	
<i>A high resolution mass spectrometric study of the ion species produced by ion bombardment</i> (C. A. EVANS, Jr., J. E. BAKER and B. N. COLBY)	*
<i>Quantitative method for the ion microprobe mass analyzer (IMMA)</i> (C. A. ANDERSEN and J. R. HINTHORNE)	*
<i>Applications of secondary ion source mass spectrography (S.I.M.S.) to the analysis of surface layers</i> (G. SLODZIAN, P. LANUSSE and R. HERMANDEZ)	*
<i>Application of characteristic secondary ion mass spectra to a depth analysis of copper oxide on copper</i> (H. W. WERNER, H. A. M. DE GREFFE and J. VAN DEN BERG)	305
<i>Secondary ion yields measured under different vacuum conditions</i> (H. BESKE)	*
<i>List of Participants</i>	311
<i>Author index</i>	319