

Contents

A. Machines and Ion Sources

- 1 Implantation machines. J.H. FREEMAN.
19 Ion sources for ion implantation. J. CAMPLAN.
26 An improved high beam current ion implanter. H. BAHRAMI, F. CHERNOW, D. DENISON and G. ELDRIDGE.
29 A fine-focussed ion machine with applications to implantation, microscopy and machining. A.R. HILL.
33 A calutron-type ion source for use in an ion implantation machine. J. TROTEL.
36 An industrial scale ion implantation facility. J.H. FREEMAN, L.R. CALDECOURT, K.C.W. DONE and R.J. FRANCIS.
41 A 200 kV ion implantation equipment at M.R.L., Salfords. G.K. McGINTY, B.J. GOLDSMITH and R.A. THOMAS.

B. Electrical Behaviour of Implanted Layers

- 46 The electrical activity of implanted layers. P. GLOTIN.
52 The influence of ion bombardment damage on the annealing behaviour of boron-implanted silicon. N.G. BLAMIRE.
57 Electrical and electron microscope studies of annealed ion-implanted silicon. R.W. BICKNELL.
61 Electrical measurements on silicon following phosphorus and boron implantation and annealing. P. BURR and J.E. WHITEHOUSE.
65 Annealing experiments on silicon layers implanted with 50 keV phosphorus ions. A. ANDERSSON and G. SWENSON.
70 Electrical properties of alkali implants in silicon. H.R. BILGER, M.A. NICOLET and O. MEYER.
74 Formation of insulating layers by the use of reactive ion beams. J.H. FREEMAN, G.A. GARD, D.J. MAZEY, J. STEPHEN and F.B. WHITING.

C. Devices

- 81 Applications to semiconductor devices. J.R.A. BEALE.
88 The thermal properties of high-value gallium and boron-implanted resistors in silicon. D.P. OOSTHOEK, J.A. DEN BOER and W.K. HOFKER.
92 A study of the characteristics of implanted p-n junctions by C(V,f) measurements. R. GISLON, N.B. URLI and U. SPOGLIA.
97 The characteristics of large-area ion implanted p-n junctions for nuclear radiation detectors. J.H. HOWES and G. KNILL.
102 High-energy boron implantation into silicon. D.P. LECROSNIER and G. PELOUS.
107 A simple experiment to compare the switching speeds of an implanted auto-registered and a diffused M.I.S.T. C.R.C. MALONEY.

D. Implantation of Non-crystalline Materials

- 109 Applications of ion implantation outside the semiconductor area. M.W. THOMPSON.
116 The doping of thin films by recoil atom implantation. P.T. STROUD, L.E. COLLINS, J.G. PERKIN and K.G. STEPHENS.
120 Ion beam irradiation of glasses. A.R. BAYLY and P.D. TOWNSEND.
123 Effect of ion implantation on electrical properties of SiO_2 films at high fields. C. FRITZSCHE, A. AXMANN and H. SEELEWIND.

E. Compound Semiconductors

- 127 Implantation of compound semiconductors. R.M. ALLEN.
135 Cathodoluminescence of ion-implanted silicon carbide. R.W. BRANDER, M.P. CALLAGHAN and A. TODKILL.
138 Damage studies in ion implanted cadmium sulphide. S.A. ARMITAGE.
143 Radiation damage studies of bismuth ion-implanted CdS. G. ELDRIDGE, P.K. GOVIND, D. NIEMAN and F. CHERNOW.
148 Radiation damage in II-VI semiconductors. J.A. OLLEY, P.M. WILLIAMS and A.D. YOFFE.
153 Properties of ion-implanted zinc telluride. J. MARINE.
158 Cathodoluminescence studies of transition metal ion-implanted II-VI compounds. A.F.J. COX.

F. Physical Processes

- 162 Ion penetration. G. DEARNALEY.
172 Location of implanted atoms within the unit cell of a crystal. J.A. DAVIES.
181 Lattice site location measurements and their interpretation. R.B. ALEXANDER, G. DEARNALEY, D.V. MORGAN, J.M. POATE and D. VAN VLIET.
187 Electrical and atom site location properties of ion-implanted germanium. A.W. TINSLEY, K.C. JONES, P.R.C. STEVENS, G.G. GEORGE and E.M. GUNNERSEN.
192 A new method for fast measurement of ion implantation profiles. O. CAHEN and B. NETANGE.
193 The distribution of P^{32} channelled into indium antimonide. M.A. WILKINS and G. DEARNALEY.
198 Gallium implantations in silicon, studied by proton backscattering, X-ray emission and Hall effect. W.F. DAN DER WEG, J.A. DEN BOER, F.W. SARIS and D. ONDERDELINDEN.
203 Measurement of implanted boron concentration profiles in silicon by the use of heavy-ion X-ray excitation. J.A. CAIRNS, D.F. HOLLOWAY and R.S. NELSON.
207 Computer-simulated flux measurements for ions channelled in diamond structure lattices. I. MASSA and G.J. CLARK.

G. Radiation Damage Processes

- 212 Radiation damage in silicon during ion implantation. R.S. NELSON.
219 Structural models for amorphous silicon and germanium. P.A. WALLEY.
227 Disorder produced during B^{11} and C^{12} implantation in silicon. F.M. EISEN and B. WELCH.
231 Void formation during high-dose ion implantation at elevated temperatures. J.A. HUDSON, D.J. MAZEY and R.S. NELSON.
235 Some observations of a regular void array in high-purity molybdenum irradiated with 2 MeV N^+ ions. J.H. EVANS.
238 Transmission electron microscope studies of radiation damage in silicon. S.M. DAVIDSON.