

Classification Index

Section 0. General	1
0.1 Reviews.....	1
0.2 Conference Proceedings.....	6
0.3 General References.....	9
0.3 Bibliographies	19
Section 1. Potentials and Scattering Cross Sections.....	20
1.1 Interatomic Potentials.....	20
1.1.1 Statistical models	20
1.1.2 Atomic (shell) models.....	21
1.1.3 Empirical models.....	23
1.1.4 Potentials deduced from experiment.....	24
1.2 Dielectric Screening.....	26
1.3 Scattering Cross Sections.....	26
1.3.1 Differential cross sections: classical description	26
1.3.2 Differential cross sections: quantum mechanical description	27
1.3.3 Experimental results.....	28
Section 2. Penetration and Scattering in Random Media	31
2.1 Nuclear Stopping Power	31
2.1.1 Review and tabulations	31
2.1.2 Theory	32
2.1.3 Experiment.....	33
2.2 Electronic Stopping Power.....	35
2.2.1 Reviews and tabulations	35
2.2.2 Theory	36
2.2.3 Experiment.....	43
2.3 Ranges and Range Distributions	51
2.3.1 Reviews and tabulations	51
2.3.2 Theory	51
2.3.3 Experiment.....	57
2.4 Multiple and Plural Scattering	70
2.4.1 Reviews and tabulations	70
2.4.2 Theory	70
2.4.3 Experiment.....	72
2.5 Low Energy Reflection Double and Compound Scattering	73
2.6 Penetration of Clusters and Molecules.....	73
Section 3. Penetration and Scattering in Crystalline Media; Channeling and blocking	77
3.1 Reviews	77
3.2 Theory and Computer Calculations.....	80
3.2.1 Continuum model	80

Classification Index

3.2.2 Computer Simulation	83
3.2.3 Stochastic and other models	88
3.2.4 Surface channeling, surface scattering	93
3.2.5 Diffraction calculations of channeling	97
3.2.6 Electron and positron channeling	97
3.2.7 Atomic states and screening	98
3.3 Experiment	99
3.3.1 Close encounter processes	99
3.3.2 Transmitted particles	105
3.3.3 Energy loss	109
3.3.4 Dechanneling	116
3.3.5 Surface channeling, surface scattering	119
3.3.6 Atomic states	125
3.3.7 Electron and positron channeling	128
3.3.8 High energy channeling	131
3.3.9 Penetration of clusters and molecules	132
3.4 Applications	132
3.4.1 Impurity ion location	132
3.4.2 Surfaces	134
3.4.3 Nuclear physics	135
Section 4. Electronic Processes	138
4.1 Reviews and Basic References	138
4.2 Charge Exchange	142
4.2.1 Theory	145
4.2.2 < 25 keV	153
4.2.3 25 keV to 300 keV	158
4.2.4 > 300 keV	160
4.3 Electron Emission	163
4.3.1 Theory	163
4.3.2 Experiment	165
4.4 Outer Shell Excitation	173
4.4.1 Theory	173
4.4.2 Experiment	177
4.5 Inner Shell Excitation	193
Section 5. Secondary Particle Emission - Sputtering	218
5.1 Reviews	218
5.2 Mechanisms	219
5.2.1 Theory and computer simulation	220
5.2.2 Experiment	225
5.3 Nature of Secondary Particles	236
5.4 Target Effects	242
5.5 Applications	247
Section 6. Radiation Damage and Defects	250
6.1 Reviews	250
6.2 Apparatus and Techniques	254
6.3 Theory and Computer Simulation	261
6.4 Semiconductors, Experimental	271
6.5 Metals, Experimental	295

Classification Index

6.6 Other Materials, Experimental	321
Section 7. Ion Beam Modification of Materials	326
7.1 Reviews and Conference Proceedings	326
7.2 Semiconductors	337
7.2.1 Silicon modification	337
7.2.2 Implantation in silicon, implanted-ion properties	353
7.2.3 Silicon implanted devices	368
7.2.4 Other semiconductors, modification	380
7.2.5 Other semiconductors, implanted-ion properties	397
7.2.6 Other semiconductors, implanted devices	404
7.3 Metals	414
7.3.1 Material modification	414
7.3.2 Implanted ion properties	425
7.4 Insulators	436
7.4.1 Materials modification	436
Section 8. Ion Beam Analysis	444
8.1 Reviews, Conference Proceedings	444
8.2 Elemental Analysis	447
8.2.1 Bulk	465
8.2.2 Surfaces	466
8.3 Lateral Analysis	472
8.4 Depth Profiling	473
8.5 Surface Structure Analysis	490
8.6 Lattice Site Location	499
8.7 Damage Analysis	500
8.8 Electron States	506
8.9 Internal Fields	509
Section 9. Apparatus and Techniques	509
9.1 Ion Sources	509
9.2 Accelerators	528
9.3 Ion Transport and Scanning	536
9.4 Ion Detectors	547
9.4.1 Semiconductor detectors	547
9.4.2 Other	555
9.5 Electronics	568
9.6 Spectrometers	569
9.6.1 Electrostatic	575
9.6.2 Magnetic	575
9.6.3 Time of flight	576
9.7 Sample Manipulators	577
9.8 Systems	579
9.9 Sample Preparation	591
9.9.1 Surface cleaning	594
9.9.2 Thin films	598
9.9.3 Thin crystals	607