SUBJECT INDEX

Ferroelastic phase transitions, 20
BaTiO₃, 22
Gdₓ(MoO₄)₂, 22
Ferroelectric domains, 22
Ferroelectric phase transitions
BaTiO₃, 22, 42
Gdₓ(MoO₄)₂, 22
NaNO₂, 42
Ferroic phase transitions, 54
Field, 31
First-order phase transitions, 54, 64
Fixed point, 7

Groups
plane, 14
site-symmetry, 16, 30
soluble, 36
maximal subgroups of, 36
space, 14–17, 33, 37
symmetric, 33
symmetry, 11
translation, 8, 14, 19

Handedness, 7, 8, 16
Headline, 72, 466
HERMANN (computer program), 61
Hermann, theorem of, 3, 23, 34, 39, 84
Hermann–Mauguin (HM) symbols, 72
Hermann’s group, 21, 61, 94–95
determination by computer, 61
Hettotype, 41, 44
Hexagonal axes, 73, 75, 83
Hexagonal closest packing of spheres, 50–51
Hexagonal crystal family, 18
Holohedral crystal class, 17
Holohedry, 17
Homeotypic structures, 46
Homomorphic groups, 12
Homomorphic image (mapping), 12, 13
Homomorphism, 12, 13, 32
kernel of, 13, 32
Identity mapping (operation), 7, 11, 29
Image, homomorphic, 12, 13
Image point, 7
Index, point-group part, 21
Index, lattice part, 21
Index of a subgroup, 12, 18, 23, 30, 36, 37, 38–39, 45, 48, 58, 62, 66, 82, 92, 466, 467
restrictions for, 23, 93, 467
Index of a supergroup, 84, 87
Infinite group, 11
Interchange of basis vectors, 469
Interchange of Wyckoff labels, 41, 468, 471–472
Interface between phases, 54
Intermediate subgroups, 46, 58
International symbols, 72
Invariant subgroup, 13
Inverse operation (element), 8, 11, 29
Inversion, 8, 14
centre of, 8
Iron fluoride (FeF₄), 50–51
Isometry, 7, 9, 29
Isomorphic G-sets, 32
Isomorphic groups, 11, 32
Isomorphic space groups, 38
Isomorphic subgroups, 4, 19, 23, 24, 45, 48, 82–84, 92, 466, 470
retrieval on the Bilbao Crystallographic Server, 58
series of, 73, 79, 82–84, 466, 468
Isomorphic supergroups, 84, 87
Isomorphism, 11, 32
multiple, 12
Isomorphism class, 11
Isomorphism theorems, 32
Isomorphism type, 11
Isosymbolic subgroups, 4
Isotopic structures, 46
Kernel
of the action, 30–31
of a homomorphism, 13, 32
Klassengleiche (k-) supergroups, 3, 18, 23, 34, 45, 47–48, 54, 79–82, 466–467
computation of, 25
graphs for, 47–48, 92–93, 454–463

Klassengleiche (k-) supergroups, 39, 84, 85, 86
Konfigurationslage, 41
Lagrange, theorem of, 12, 31
Landau theory, 4
Lattice, 33
Bravais, 17
centred, 14
primitive, 14
Lattice basis, 8
Lattice parameters, 9
Lattice system, 15, 17
Lattice type, 17
Lattice vector, 8, 14
Law, associative, 11, 29
Law of composition, 10, 11, 29
Law of rational indices, 2
Law of symmetry, 2
Lead titanate zirconate (PbZr₁₋ₓTiₓO₃), 64
Left coset, 12, 30
Length of a conjugacy class, 13
Length of a coset, 12
Linear group, 28
Linear mapping, 28
Linear part, 9, 16, 29
Loss of centring translations, 73, 79, 466

Macroscopic crystal, 7
Mapping
affine, 7, 8, 29
description of, 8
geometric, 7
homomorphic, 12, 13
identity, 7, 29
linear, 28
orthogonal, 10
reversible, 7
Matrix
augmented, 9, 52, 78
metric, 9
transformation, 10, 52–53, 59, 77–78, 469
Matrix-column pair, 9, 52, 77
Matrix part, 9
of inversion and of translation, 14
Maximal subgroups, 12, 18, 23, 34, 35, 45–48, 466
computation of, 25
retrieval on the Bilbao Crystallographic Server, 58
of soluble groups, 36
trees of, 44–52
Maximal-subgroup rule, 4
MAXSUB (computer program), 58
Metric matrix, 9
Microscopic description of domain structures, 20
Minimal supergroups, 12, 39, 84–90
determination by computer, 64
MINSUB (computer program), 64
Mirror plane, 8
Monoclinic axis, 73
Monoclinic space groups, symbols of, 73
Monoclinic subgroups, settings of, 74, 466, 471
Morphotropic transition, 64
Motion (rigid motion), 7
Multiple isomorphism, 12
Multiplication table of a group, 11
Multiplicity, 41, 42
N-fold rotation, 7
N-fold rotoinversion, 8
Neutral element, 11
Nickel arsenide sulfide (NiAsS), 47
Non-chiral (non-enantiomorphic) space groups, 46
SUBJECT INDEX

Supergroups, 12, 39, 64, 84
common, 49, 87
derivation of, 86–90
determination by computer, 64–65
general, 84
index of, 84, 87
isomorphic, 84, 87
translationengleiche, 39, 84, 85, 86
minimal, 12, 39, 84–90

Symmorphic space groups, 16, 35
Symmorphic space-group types, 16

Theorems
Galois’ theorem, 36
Hermann’s theorem, 3, 23, 34, 39, 84
isomorphism theorems, 32
Lagrange’s theorem, 12, 31
Sylow’s theorems, 31–32
Time-dependent phenomena, 54
Topotactic reactions, 5, 44, 54
Transformation matrix, 10, 52–53, 59, 77–78, 469
Transformation of bases and coordinates, 10, 45, 52–53, 77–79, 82, 467, 468, 469, 761–762
Transformation twin, 20
Transitive G-set, 30
Translation, 7, 14, 29
Translation group, 8, 14, 19
Translation part, 9
Translation subgroup, 14, 29, 33
Translation twinn, 22
Translation vector, 7, 8, 14
Translation-vector space, 29
Translational conjugation, 470
Translational domain structure, 22, 54

Tungsten trioxide (WO3), polymorphic forms, 51

Twin domains, 5, 20, 54
Twinning, twins, 5, 20
Typical Euclidean normalizer, 20

Underlying vector space, 28
Unit cell
decreased, 73, 86
enlarged, 47, 62, 73, 80–82, 466, 470
Unit element, 11, 29

Vector, 10, 27
basis, 8, 9, 14, 45
lattice, 8, 14
null, 27
screw, 8
translation, 7, 8, 14

Vector coefficients, 8, 10, 27
Vector lattice, 8, 14
Vector space, 27
Euclidean, 28
underlying, 28

Voids, occupation of, 50–51

Wyckoff letter, 41
Wyckoff positions, 41, 468
on the Bilbao Crystallographic Server, 57

Zirconium beryllium silicide (ZrBeSi), 47