

INDEX

A

- Acide-base concepts, 239
 - Arrhenius, 239
 - Bronsted, 240
 - Lewis, 241
 - Protonic, 239
- Acids, 239
 - hydrohalic, 629
 - monoprotic, 243
 - polyprotic, 243
 - proton donors, 239
 - relative strength, 245, 250
 - hard and soft 255
- Actinide series, 777, 794
- Activated alumina, 436
- Activity series, 210
- Adenosine, 546
- Age of the earth, 789
- Alkali metals, 314
- Alkaline earth metals, 369
- Allotropic forms
 - of carbon, 452
 - of oxygen, 562
 - of phosphorous, 535
 - of tin, 478
- Alloys
 - of Aluminium, 427
 - of cobalt (see Alnico), 427
 - of copper, 354
 - of iron, 664
 - of lead, 486
 - of magnesium, 380
 - of manganese, 648
 - of mercury, 414
 - of nickel, 673
 - of silver, 355
 - of sodium, 325
 - of tin, 480
- Alnico, 427
- Alpha particles, 10, 769
- Alum, 439
- Aluminium, 416
 - Chloride, 437
 - Compounds, 437
 - hydroxides, 437
 - metallurgy, 424
 - nitride, 440
 - oxide, 436
 - properties, 418
 - silicates, 441
 - sulphate, 439
 - uses, 427
- Amalgams, 414
- Ammonia, 503
 - chemical properties, 505
 - cyanamide process, 505
 - Haber process, 504
 - liquid, 504, 508
 - structure, 506
 - properties, 505
- Ammonium, 509
 - amalgam, 512
 - carbonates, 511
 - chloride, 510
 - molybdate, 610
 - nitrate, 510
 - phosphomolybdate, 610
 - sulphate, 510

- Ammonolysis, 182
- Amphoteric hydroxides, 229
- Anhydrite, 390
- Antichlor, 549
- Antinock gasoline, 489
- Antimony, 549
 - compounds, 549
 - halides, 550
 - oxychloride, 550
- Aqua regia, 528
- Arc process 523
- Argon, 262, 267
- Arsenic, 549
 - compounds, 549
- Asbestos, 378
- Association, 178
 - of HF, 632
 - of water, 289
- Astatine, 628
- Atmosphere, 257
 - composition, 257
- Atomic structure, 1
 - bomb, 774
 - energy, 776
 - hydrogen 283
 - mass, 7
 - number (z), 13
 - orbitals, 52
 - pile, 775
 - radii, 105
 - spectra, 19, 28
 - theory, 1
- Avogadro's number, 2
- Azides, 514
- B**
- Barium, 370
 - chromate, 393
 - oxide, 392
 - sulphate, 392
 - Sulphide, 392
 - uses, 381
- Baryta, 392
 - water, 392
- Barytes, 392
- Base, conjugate, 242
- Bases, 239
 - strength of, 250
 - hard and soft 255
- Basic hydroxides, 227
- Bauxite, 424
- Becquerel, 767
- Beryl, 376
- Beryllium, 376
 - halides, 381
 - hydroxide, 381
 - oxide, 381
- Bessemer process, 662
- Beta rays, 10, 760
- Betatron, 705
- Betts' process, 485
- Bismuth, 549
 - oxychloride, 550
- Black tin, 478
- Blast furnace, 660
 - slag, 661
- Bleaching, 300
 - powder, 642
 - by sulphurous acid, 581
- Bilster copper, 350
- Block tin, 478
- Bohr's atom, 24
- Boiler scale, 286

- Bonds, 56
 Ionic, 59
 covalent, 66
 coordination, 70
 dipole, 102
 hybrid, 77
 Bond angle, 126, 173, 174
 Bond length, 106, 125
 Bond energy, 127
 metallic, 99
 order, 99
 sigma & pi bonds, 95
- Bone ash, 520
- Borates, 436
- Borax, 435
 bead, 435
- Borazol, Borazine, 430
- Boric acid, 433
- Boric oxide, 434
- Born haber treatment, 318
- Boron, 416
 halides, 432
 hydrides, 429
 nitride, 431
 uses, 427
- Boron and Aluminium, 416
 and silicon, 4208
- Brass, 354
- Bridge elements, 149
- Brimstone, 566
- Bromates, 644
- Bromic acid, 639
- Bromine, 627
 chemical properties, 617
 oxides, 637
 fluorides, 615
- Bronsted concept, 240
- Bronze, 354
- C
- Cadmium, 397
 complexs, 406
 metallurgy, 401
- Calcination, 304
- Calcite, 389
- Calcium, 370
 carbide, 462
 carbonate, 388
 chloride, 390
 cyanamide, 462
 hydroxide, 387
 hypochlorite, 643
 oxalate, 391
 oxide, 387
 EDTA-complex, 3894
 sulphate, 390
 superphosphate, 544
- Californium, 777
- Calomel, 408
- Carat, 355
- Carbon, 446
 physical properties, 448
 carbonates, 456
- Carbondioxide, 454
 uses, 455
- Carbon disulphide, 460
- Carbon monoxide, 457
- Carborundum, 469
- Carnallite, 378
- Caro's acid, 595

- Cast iron, 661
Castner-Kellner Cell, 329
Cathode rays, 4
Caustic,
 potash, 336
 sode, 328
Cell, primary, 212
 secondary, 212
 storage, 213
 Down' 322
 dry, 212
Cement 389
 Portland, 389
 setting, 389
 sorel, 384
 Cementite, 661
Cesium, 322
Chalcogens, 554
Chalcocite, 347
Chalcopyrite, 347
Chemical Bond, 57
Chile nitre, 333
 saltpetre, 498
Chlorauric acid, 367
Chlorine, 625
 chemical properties 621
 dioxides, 638
 oxyacids, 640
 physical properties, 617
 trifluoride, 635
 uses, 629
Chlorosulphonic acid, 583
Chlorous acid, 643
Chromate ion, 607
Chrome alum, 606
Chromic acid, 606
Chromite, 600
Chromium, 554, 600
 chloride, 604
 compounds, 603
 metallurgy, 600
 uses, 603
 Chromyl chloride, 609
Cinnabar, 402
Cis-configuration (isomer), 710
Clay, 441
Cleveite, 263
Coal gas, 459
Cobalt, 665, 668
 compounds, 669
 complex compounds, 670
 metallurgy, 668
 uses, 669
Cobaltite, 668
Coinage metals, 341
Colemanite, 422
Complex compounds, 678
 isomerism, 700
 structure, 685, 687, 691
Complex ions, 680
Condensation reaction, 177
Conjugate base 243
Conjugate acid, 243
Contact process, 585
Coordination
 number (crystal), 115
 number (complex), 692
 bond, 680
Copper, 347
 compounds, 355
 complexes, 362
 electrorefining, 349
 hydrometallurgy, 350

metallurgy, 348
 oxidation states, 356
 sulphate, 359
 uses, 354
 Corrosive sublimate, 410
 Corundum, 424
 Coulomb, 3
 Covalent radii, 105
 bond, 66
 Covalent bond, 66
 Cryolite, 624
 Crystal coordination, 115, 745
 Crystals 740
 types 742
 symmetry 745, 747
 Crystallattice, 116, 744
 lattice energy, 116
 field theory, 724
 Cyanamide process, 505
 Cyanogen, 463
 Cyclotron, 777

D

Decomposition reaction, 178
 Defect solids, 756
 Detonater, 412
 Deuterium, 284
 oxide, 203
 Deuteron, 284
 Dewar flask, 259
 Diamine silver complexes, 692
 Diamond, 453
 Diaspore, 424

Diborane, 429
 Dichromate, 603
 Dielectric constant, 65
 Diffusion, fractional, 263
 of UF_6 , 786
 Dimethyl glyoximecomplex of Ni, 708
 Directed bond, 77
 Dipole bond, 119, 124
 Disproportionation, 179
 Dissociation constants, 250
 of complex, 680
 Distribution of electrons, 40
 Dobereiner, 131
 Dolomite, 378
 Donor-Acceptor atoms, 71
 Down's cell, 322
 Dry cell, 212
 Dry ice, 456
 Duplex process, 663
 Duralumin, 427
 Duriron, 470

E

Effective atomic number, 689, 714
 Efflorescence, 332
 Electrode potentials, 210
 measurement of, 205
 table of standard, 210
 Electromotive force (E.M.F.), 210
 Electromotive series, 209
 uses, 211
 Electron, 3, 15
 affinity, 112
 energy level diagram, 44
 for atomic orbitals, 45

- Electron Pair Repulsion, 156
 - structures, 169, 172
- Electron orbitals, 47, 52
 - orbits, 24
 - table of distribution, 40
 - in atoms of element, 40
 - types, 35
 - wave nature, 47
- Electronegativity, 120
 - values of, 121
 - variation in, 145
- Electronic concept, 57
- Energy level, 2, 43
- Equation balancing of redox, 197

F

- Fajan's rule, 119
- Faraday of electricity, 3
- Fehling solution, 362
- Feldspar, 379, 441
- Fentons's reagent, 298, 666
- Ferrochrome, 600
- Ferromanganese, 648
- Ferrosilicon, 470
- Fertilizer, 504
- Fixation of nitrogen, 502
- Floatation process, 304
- Fluorapatite, 532
- Fluorescent tubes, 275
- Fluorine, 615
 - chemical properties, 617
 - oxides, of, 637
 - physical properties, 617

- Fluorite, 630
- Fluorspar, 624
- Flux, 305
- Fool's gold, 659
- Francium, 323
- Frasch process, 565
- Freon, 629

G

- Galena, 565
- Gallium, 416
- Galvanizing, 403
- Gamma rays, 10
- Gangue, 305
- Gas mantles, 443
- Gels, 469
- Germanium, 476
- German silver, 354, 673
- Glass, 471
 - boron containing, 471
 - flint, 471
 - melting of, 471
 - pyrex, 472
- Glover tower, 587
- Gold, 352
 - metallurgy, 353
 - properties, 343
 - uses, 355
- Graham's salt, 546
- Graphite, 453
 - layer structure, 453
 - properties, 453
 - uses, 454
- Gypsum, 390, 565

H

Haber Process, 504

Hafnium, 490

Hahn, 774

Halates 644

Half-life, 764

Halic acids, 644

Halides, 634

of metals, 633

of phosphorus, 537

uses, 634

Halites, 643

Hall and Baeyer's method, 424

Hall-Herault Process, 425

Halogens, 514

oxyacides of, 639

physical properties, 617

chemical properties, 621

preparation, 623

structure, 615

uses, 629

Halous acids, 643

Hardness of water, 285

Heavy water, 293

Helides, 267

Helium, 264

Hematite, 659

Haemoglobin, 737

Hexahydrated chromium (III) ion, 701

Hexamine cobalt (III), 684

hydroxide, 706

Hexaminocobalt (II) ion, 684

Hexamine nickel (II) ion, 687

High-test hypochlorite, 643

Horn silver (blende), 351

Hybride Bonds, 77

Hybridization of orbitals, 78, 86, 691

Hydraulic mining, 353

Hydrazine, 512

Hydrazoic acid, 514

Hydrides, 280

of boron, 429

ionic, 280

of silicon, 466

of sulphur family, 556, 572

Hydrogen, 277

atomic, 283

chemical properties of, 279

isotopes, 284

physical properties of, 279

preparation, 277

uses, 282

Hydrogen bomb, 778

bond, 100

bromide, 633

chloride, 633

cyanide, 463

difluoric ion, 633

electrolytic production, 278

fluoride, 632

iodide, 633

peroxide, 295

preparation, 295

structure, 299

uses, 300

selenide, 557

sulphide, 571

telluride, 557

Hydrohalic acid, 629

uses, 634

Hydroxylamine, 515

Hydrolysis, 291

Hydrometallurgy, 350

Hydronium ion, 239
 Hydroxides, 226
 Hydroxylammonium salts, 515
 Hypo, 594
 Hypobromous acid, 642
 Hypochlorous acid, 642
 Hypohalites, 642
 Hypohalous acid, 642
 Hyponitrous acid, 530
 Hypophosphorous acid, 548

I

Icelandspar, 389
 Inert gases, 258, 260
 chemical properties, 271
 discovery, 261
 electron distribution, 269
 physical properties, 270
 Isolation, 264
 uses, 274
 compounds, 274
 Interhalogen compounds, 635
 Invar, 664
 Iodates, 644
 Iodic acid, 644
 Iodine, 615, 628
 basic, 639
 oxides of, 639
 pentafluoride, 635
 trichloride, 636
 uses, 629
 Ion-exchange, 287
 Ionic bond, 59
 dissociation, 178
 hydrides, 280
 potential, 252
 properties, 63

 radii, 113
 variation in, 143
 covalent nature, 118
 Ionization, 109
 of hydrofluoric acid, 632
 of hydroxyl compounds, 234
 of polyprotic acids, 243, 251
 of water, 290
 of weak acids, 243
 of weak bases, 254
 Ionization constants, 254
 Ionization potential, 111
 variation in, 136
 Iridium, 656
 Iron, 656
 complex cyanides, 666
 (III) compounds, 666
 (III) hexacyanoferrate, 667
 hydroxides of, 665
 magnetic oxides of, 665
 metallurgy, 658
 occurrence, 659
 properties, 658, 659
 rust, 664
 (II) salt's 666
 sulphate, 666, 667
 Isoelectronic, 120
 Isomorphous crystals, 64
 Isomerism a complexes, 700
 Isotopes, 18
 meaning of term, 19
 group displacement law, 761
 separation, 782

J

Jahn-Teller effect, 728
 Joul-Thomson effect, 260

K

- Kaolin, 441
 Kelp, 628
 Krypton, 262, 267

L

- Lakes, 437
 Langmuir theory, 70
 Lanthide series, 442
 Latral energy, 116
 Laughing gas, 507
 Lead., 484
 - acetate, 488
 - basic chromate, 488
 - carbonate, 489
 - chamber process, 586
 - chloride, 487
 - compounds, 486
 - metallurgy of, 484
 - oxides, 486
 - properties, 448
 - red, 486
 - storage battery, 205
 - sulphate, 488
 - uses, 485
 - white, 489
 Lime, 387
 Lime kiln, 388
 Limestone, 388
 Lime water, 388
 Limonite, 659
 Liquid air, 259
 - properties, 260
 - uses, 260

- Litharge, 486
 Lithium, 322
 Lithium-aluminium hydride, 326
 - anomaly of, 326
 - carbonate, 325
 - fluoride, 324
 Lithopone, 393
 Lunar caustic, 365

M

- Magnalium, 380
 Magnesia, 384
 Magnesite, 378
 Magnesium, 378
 - carbonate, 384
 - chloride, 385
 - hydroxides, 384
 - nitride, 386
 - oxide, 384
 - perchlorate, 386
 - properties, 371
 - properties, 370
 - silicates, 386
 - sulphate, 385
 - uses, 380
 Magnetite, 659
 Malachite, 347
 Manganese, 614, 647
 - chlorides, 649
 - compounds, 648
 - dioxide, 649
 - metallurgy, 647
 - properties, 648
 Match industry, 535
 Mendeleef, 132

Mendelevium, (see Periodic Table)

Mercury, 398

(II) amidochloride, 412

(I) compounds, 407

(II) fulminate, 412

metallurgy, 402

(I) oxide, 407

(II) oxide, 409

properties, 398

purification, 403

uses, 403

Mesons, 17

Metaboric acid, 434

Metallic bond, 99

Metalloid, 302

Metallurgy, principles of, 302

Metals, 303

Metal carhides, 461

Metal carbonyls, 712

Metal nitrosyls, 716

Metaperchloric acid, 227

Meta phosphoric acid, 546

Metastannic acid, 481

Meyer, Lothar, 132

Millikan, 6

Moderator, nuclear, 776

Mohr's salt, 666

Molecular orbital, 88

Molybdenum, 577

MOT & π -bonding, 735

Monazite sand, 443

Mond process, 671

Monel metal, 673

Monosilane, 466

Mordant, 437

Mosaic Gold, 483

Moseley, 13, 14

N

Neon, 268

uses, 274

Neptunium, 762

Nessler's Reagent, 413

Neutralization, 181

Neutron, 16,779

Newlands, 132

Nichrome, 603, 673

Nickel, 670

carbonyl, 674

compounds, 673

dimethyl glyoxime, 674

metallurgy, 670

oxides, 673

plating bath, 673

properties, 658, 659

uses, 673

Niobium, 494

Nitric acid, 522

action on metals, 526

as oxidizing agent, 526

action on non-metals, 527

chemical properties, 524

uses, 528

Nitric oxide, 520

Nitriding, 663

Nitrogen, 494, 498

atomic, 501

cycle of, 502

fixation, 502

oxidation states, 495, 500

oxides of, 518

preparation, 498

properties, 499

halides, 497

uses, 501

- Nitrolime, 462
 Nitrous acid, 522
 Nuclear reaction, 768
 chemistry, 758
 energy, 781
 fission, 703, 774
 fusion, 706, 778
 Nucleus, 12, 758
 composition, 16, 707, 779
- O**
- Octet of electrons, 67
 Octahedral complexes, 697
 Oleum, 583
 Olivine, 472
 Open-hearth process, 663
 Orbitals, 47
 hybridization of, 77
 Ores, 303
 calcination of, 304
 concentration of, 303
 separation, 304
 smelting 305
 roasting of, 304
 Orthoboric acid, 433
 Orthophosphoric acid, 541
 Ortho silicic acid, 468
 Osmium, 656
 Ostwald process, 524
 Oxidation, 189
 concepts of, 189
 number, 195
 Oxidation-reduction, 189
 equations, 197
 Oxides, 216
 acidic, 218
 basic, 216
 of nitrogen, 518
 of phosphorus, 540
 of sulphur, 579
 Oxyacids of nitrogen, 522
 Oxyacetylene torch, 562
 Oxygen, 554, 558
 bonding in, 561
 chemical properties, 559
 importance, 554
 preparation, 558
 uses, 562
 Ozone, 562
 bonding in 564
 preparation, 562
 properties, 563
- P**
- Packing effect, 782
 Palladium 675
 Paramagnetism, 683
 of oxygen, 561
 of complexes, 728
 Parke's process, 351
 Parting of gold and silver, 351
 Passively, 529, 665
 Pauli exclusion passivity principles, 34
 Pauling, 691
 Pentlandite, 670
 Perchloric acid, 620, 645
 Perhalic, 645
 Periodic Law, 132
 Periodic system, 134
 Periodic Table, 134(a), 134(b)
 uses, 149
 drawbacks, 150

- Permanganate ion, 651
- Permutit, 286
- Peroxides, 221
- Peroxysulphuric acid, 595
- Pharaoh's Serpentine, 412
- Phosphine, 536
- Phosphonium, compounds, 537
- Phosphor bronze, 335, 355
- Phosphorescence, 533
- Phosphoric acid, 543
 - ionization, 244, 543
- Phosphorite, 532
- Phosphorus, 531
 - oxides of, 540
 - oxyacids of, 528, 531
 - chemical properties, 533
 - compounds, 536
 - halides, 537
 - oxyhalides, 539
 - preparation, 532
 - properties, 533
 - uses, 535
- Photochemical reactions, 184
- Photoelectric, 324
- Photographic processing, 366
- Photosynthesis, 718
- Pi complexes, 718
- Pig iron, 667
- Piles nuclear, 775
- Planar structures, 695, 772, 727
- Plaster of Paris, 390
- Platinum, 675
- Plumbago, 453
- Plumbate, 486
- Plutonium, 799
- Polarity of molecules, 119
- Polarisation, 119
- Polonium, 776
- Polyhalides, 636
- Polymerization, 177
 - condensation, 177
- Polymetaphosphate, 541
- Polysulphides, 575
- Polythionic acids, 592
- Potassium, 315, 323
 - carbonate, 337
 - chlorate, 646
 - chromate, 607
 - cyanate, 464
 - cyanide, 337
 - dichromate, 588, 606
 - ferrocyanide, 666
 - hexacyanocobaltates, 669
 - hexanitro cobaltate, 670
 - manganate, 65
 - oxides, 335
 - perchlorate, 646
 - permanganate, 651
 - peroxide, 213, 335
 - properties, 315, 316
 - pyrosulphate, 591
 - thiocyanate, 464
- Potentials
 - standard, 210
- Producer gas, 458
- Protium, 284, 706
- Proton, 15
 - acceptor, 240
- Prussian blue, 666
- Purple of Cassius, 355
- Pyramidal structures, 160, 506
- Pyrites, 659
- Pyrolusite, 647
- Pyrophosphoric acid, 541
- Pyrosulphuric acid, 545

Q

- Quantum numbers, 30
- Quartz, 469
- Quick lime, 387

R

- Radii, atomic, 105
 - covalent, 105
 - ionic, 108, 113
- Radioactive, 10, 757
 - disintegration, 760
 - disintegration series, 762
 - disintegration constant, 764
- Radioactivity, 10, 759
 - natural, 759, 760
 - artificial, 773
- Radiochemistry, 759
- Radioisotopes, 707
 - as tracers, 787
- Radiotherapy, 275
- Radium, 792
- Radius-ratio effect, 114, 116
- Radon, 268
- Ramsay, 262
- Rare earth elements, 442
- Separation, 443
- Rayleigh, 261
- Rays, alpha, 11, 757
 - beta, 10, 757
 - canal, 9
 - cathode, 4
 - gamma, 10, 693
 - positive, 9
- Reactions, 177
 - acid-base, 181
 - direct union, 180
 - displacement, 181
 - disproportionation, 179
 - double decomposition, 181
 - electrophilic, 186
 - endothermic, 185
 - exothermic, 185
 - metathetical, 181
 - nucleophilic, 186
 - oxidation-reduction, 189
 - photochemical, 184
 - polymerisation, 177
 - types of, 176
- Red lead, 486
- Reduction, 189
- Resonance structure, 85
- Resonance Rule, 86
 - of carbonate, 332
 - of nitrate, 85
 - of nitric oxide, 87
 - of nitrogen dioxide, 522
 - of sulphur trioxide, 583
- Roasting of ores, 304
- Rockets, 300, 514
- Rutherford, atom model, 12
- Limitations, 22

S

- Salt peter, Chile, 333
- Scandium, 441
- Scattering of β -rays, 10
- Selenic acid, 542
- Selenium, 555
 - chemical properties, 557
 - dioxide, 557
 - physical properties, 571

- rectifier, 544, 556
- uses, 571
- Serpuk's Process, 425
- Shapes of molecules, 156
- Sheratdizing, 398
- Theory, 687
- Siliane, 467
- Silica, 469
 - gel, 469
 - glass, 471
- Silicates, natural, 472
 - classification, 465
- Silicic acids, 468
- Silicon, 446
 - carbide, 469
 - dioxide, 469
 - halide, 467
 - hydrides, 466
- Silicones, 475
- Silicones, 468
- Silver, 351
- Sizes of atoms, 105
 - ions, 105
- Sodium, 321
 - amalgam, 329
 - amide, 334
 - borohydride, 431
 - carbonate, 330
 - chloride, 333
 - chlorite, 644
 - cyanide, 335
 - Down's cell, 322
 - hexametrphosphate, 546
 - hexanitrocobaltate, 670
 - hydroxide, 328
 - hypochlorite, 642
 - metaperiodate, 646
 - metaphosphate, 546
 - metastannate, 481
 - nitrate, 333
 - nitrate, 335
 - oxides, 305
 - perborate, 436
 - peroxide, 327
 - properties, 316
 - silicate, 334
 - stannate, 481
 - tetraborate, 435
 - thiosulphate, 593
- Solder, 472
- Solids, 740
- Solubility, 66
 - crystal force, 66
 - dielectric constants, 66
 - energy of ion hydration, 319
- Solvation, 318
- Solvay process, 329
- Sorel cement, 384
- Spectrum 19
 - atomic, 19
 - bright line, 20
 - emission, 20
 - absorption, 20
 - origin, 28
- Spiegeleisen, 662
- Square planner configuration, 695
- Stainless steel, 664
- Stannic acids, 481
 - chloride, 481
- Stannous chloride, 481
- Steel, 662
 - alloy, 664
 - annealing, 664
 - Bessemer process, 662

- case-hardened, 663
 - Duplex process, 663
 - electric process, 663
 - highspeed, 636, 664
 - manufacture, 662
 - Open -hearth process, 663
 - tempered, 664
 - stainless, 664
 - Strontium, 372
 - oxide, 391
 - preparation, 391
 - Substitution reaction, 181
 - Sulphamic acid, 590
 - Sulohur, 554, 565
 - allotropic forms, 567
 - Chemical properties, 569
 - dichloride, 578
 - dioxide, 571
 - extraction, 551, 565
 - family, 554
 - Frasch process, 565
 - hexafluoride, 576
 - monochloride, 577
 - oxide, 579
 - oxyacids, 583
 - physical properties, 555
 - tetrachloride, 575
 - uses, 571
 - Sulphuric acid, 585
 - chemical properties, 588
 - contact process, 585
 - dyhydrating agent, 589
 - fuming, 583
 - lead-chamber process, 586
 - structure, 589
 - Sulphurous acid, 583
 - Sulphuryl chloride, 578
 - Superacids, 248
 - Superoxides, 224
 - Superphosphate of lime, 544
 - Sylvine, 336
 - Synchrotron, 777
- T
- Tantalum, 496
 - Technetium, 614
 - Teflon, 629
 - Telluric screw, 131
 - Tellurium, 554
 - chemical properties, 555
 - Tetraethyl lead, 489
 - Tetrahedral, 160
 - orbitals, 82
 - Tetrahedral complexes, 694
 - Tetrahedron, 79, 726
 - Tetrathionate, 594
 - Thalium, 418
 - Thermite process, 428
 - Thionyl chloride, 579
 - Thiosulphuric acid, 592
 - Thoria, 796
 - Thorium, 795
 - hydroxide, 796
 - series, 762
 - tetrachloride, 796
 - Tin, 477
 - block, 478
 - halides, 481
 - compounds, 480
 - cry, 479
 - disease, 479
 - metallurgy, 477
 - oxides, 480

pest, 479
 properties, 478
 uses, 480
 white, 478
 Tincture of iodine, 629
 Tinstone, 477
 Titanium, 490
 Trans-isomer, 704
 Treacer experiment, 294
 Transistors, 470
 Transition metals 681
 colour of ions, 683
 magnetism, of, 683
 Transuranium elements, 776
 Travers, 263
 Triads, 121
 Tricalcium phosphate, 544
 Trigonal bipyramid, 158, 81, 162
 Triple superphosphate, 545
 Tritium, 284
 Tungsten, 610
 Turnbull's blue, 667
 Tuyeres, 660
 Type metal, 480

U

Uranium, 797
 hexafluoride, 798
 salts, 798
 series, 762
 Uranyl acetate, 799
 nitrates, 798

V

Valence Bond Theory, 74
 Valence electrons, 45, 57
 concepts of, 58
 covalent, 66

electrons and the
 peroxidic law, 136
 variable, 98

Vanadium 551
 van der Waal's force, 102
 Venetian red, 666
 Vermilion, 411

W

Washing soda, 330
 Water, 284
 an acid, 282
 a base, 282
 physical properties, 285
 gas, 458
 glass, 471, 334
 hard, 285
 heavy, 293
 ionization, 290
 purification, 285
 softening of, 286
 structure of, 288
 zeolite, 286

Werner, 685
 Weston standard cell, 401
 White lead, 489
 White vitriol, 405
 Wolfram, 610
 Wrought iron, 661

X

Xenon, 266
 Xenon fluorides, 237
 X-rays, 14, 749
 structure determinations by, 751
 Bragg's equation 754
 diffraction, 755

powder method, 751
single crystal method, 754
crystallography, 740
Laue method, 752

Y

Yttrium, 416

Z

Zeolites, 286, 474

Zinc, 397, 401

basic carbonate of, 404
blende, 401
chloride, 405

compounds, 404
hydroxide, 404
metallurgy, 401
oxide, 404
properties, 398
sulphate 405
uses, 403
white, 404

Zincate ions, 404

Zinc uranyl acetate, 749

Zircon, 491

Zirconium, 490

compounds, 491
oxychloride, 491

THE END

