

Index

- X-traps, 132
 β -(BEDT-TTF)₂I₃, 352, 357, 360
 κ -(BEDT-TTF)₂Cu(NCS)₂, 352
 κ -(BEDT-TTF)₂Cu[N(CN)₂]Br, 352, 359
 κ -(BEDT-TTF)₂Cu[N(CN₂)]Cl, 352, 358
 π bond, 3
 π orbitals, 314
 π -electron systems, 226
 π -electrons, 3
 σ bonds, 2
 σ electrons, 3
 d electrons, 324
 d orbitals, 327
 n -octane, 35
 (2,5-Dimethyl-DCNQI)₂Cu⁺, 322
 (BEDT-TTF)₂SF₅CH₂CF₂SO₃, 359
 (DCNQI)₂Cu⁺, 308
 (Fa)₂PF₆, 310, 330
 (Fa)₂⁺PF₆⁻, 34, 43, 308
 (TCNQ)₃, 311
 (TMTSF)₂ClO₄, 352, 356, 360
 (TMTSF)₂PF₆, 352, 353, 356
 (TTF)-chloranile, 399
 (di-fluoranthene)-hexafluorophosphate,
 308
 (fluoranthene)₂⁺PF₆⁻, 322
effet solide, solid-state effect, 212
 0,0 transitions, 129
 1,4-dibromo-naphthalene, 39
 2,3-dimethyl naphthalene, 2

 A-PMDA, 323
 A-TCNB, 323
 absorption coefficient, 125, 129
 absorption spectrum, 131, 133
 acceptor, 34, 42, 253
 acridine, 2, 213
 activation barrier, 370
 adiabatic energy gap, 231

 ADMR, 215
 aliphatic compounds, 6
 aliphatic molecules, 34
 alkanes, 35, 41
 alkyl-trichloro-silane, 402
 Alq₃, 257, 370, 373
 Alq₃ vapour-deposited films, 293
 amphiphilic molecules, 47
 anisotropy, 43, 310, 315, 323, 331, 354, 358
 anisotropy of the mobility, 265
 annihilation, 163, 165, 167
 antenna molecules, 171
 anthracene, 2–4, 6, 10–12, 15, 27, 36, 42, 51,
 52, 64, 70, 77, 79, 81, 91, 92, 104, 110,
 121, 126, 142, 143, 145, 147, 150, 157,
 158, 186, 199, 200, 217, 222, 231, 238,
 265, 268, 309
 anthracene-PMDA, 42, 309
 anthracene-pyromellitic acid-dianhydride,
 151, 323
 anthracene-TCNB, 40, 309
 anthracene-tetracyano-benzene, 7, 323
 antiferromagnetic ordering, 329, 356
 aromatic compounds, 36
 aromatic hydrocarbons, 2, 6, 35
 aromatic molecules, 34
 atom-atom interactions, 107
 atom-atom potentials, 31, 32, 34, 107
 autoionisation, 241

 Bässler model, 282, 287, 289, 301
 bacterio-chlorophyll, 171
 band conductivity, 219, 263
 band gap, 223, 317
 band model, 228
 band model for a metal, 226
 band structures, 272
 bandwidth, 263, 273
 BAYTRON, 16, 373

- BCP, 373, 376
- BCS theory, 351, 352, 360, 362
- Bechgaard salts, 352, 353, 356
- BEDT-TTF, 357
- benzene, 2, 35, 116
- benzofurane, 2
- benzothiophene, 76
- binary systems, 289
- biphenyl, 110, 186
- bipolar current, 293, 365
- bipolar transistors, 405
- bisethylene-dithiolo-tetrathio-fulvalene, 357
- bonding isomerisation, 393
- Born-Meyer potential, 30
- Bosons, 351
- BPPC, 289
- bridging function, 324
- Bridgman crystal, 5, 66, 82, 411
- Bridgman crystal-growth process, 65
- Brillouin zone, 94
- Buckingham potential, 30
- buffer layer, 377
- built-in field, 248, 370
- C_{60} , 72, 381
 - compounds, 352
 - optical constants, 387
 - superconductors, 362
- carbazole, 2
- carbene, 188
- CBP, 376
- CDW, 330
- channel, 402–404
- characteristic phonons, 111
- charge bridges, 323
- charge equilibrium factor, 372
- charge separation, 238, 381
- charge transfer, 34, 42, 253, 307, 310, 324, 381
- charge transport, 12, 234
- charge transport in disordered organic semiconductors, 279
- charge-carrier concentration, 217, 313, 334
- charge-carrier density, 224, 260
- charge-carrier dissociation, 365
- charge-carrier generation, 303
- charge-carrier mobility, 224, 403, 404
- charge-carrier mobility in organic molecular crystals, 263
- charge-carrier pairs, 365
- charge-carrier traps, 257, 258, 277
- charge-density wave, 315, 320, 321, 329, 330
- charge-density-wave transport, 343
- charge-transfer complexes, 7
- charge-transfer crystals, 2, 3
- charge-transfer excitons, 149, 150, 173, 370
- charge-transfer interactions, 42
- charge-transfer states, 130
- chemical stabilisation, 309
- chemisorption, 49
- Child's law, 246, 247, 260
- chlorophyll, 171
- chromatography, 58
- circuits, 405
- classes of materials, 5
- clathrates, 40
- coherence, 147, 148, 160
 - length, 147, 359, 362
 - of triplet excitons, 188
 - time, 147
- coherent, one-dimensional triplet excitons, 203
- columnar phases, 291
- combination of electrical and optical properties, 365
- commensurate charge-density wave, 319, 334
- compressibility, 105
- conduction band, 130, 226, 263, 314
- conduction electrons, spatial distribution, 343
- conduction-electron spin resonance, 337
- conductivity, 43, 217, 223, 313–315, 323, 330, 331, 354, 358
 - high, 314
 - metallic, 43
 - optical, 336
- conductors, 42
- constant mobility with discrete trapping states, 261
- constant mobility without trapping states, 260
- contact barriers, 229
- contact potential, 247, 248
- contact voltage, 370
- contacting, 400
- contacts, 245, 247, 258, 280, 395
- Cooper pairs, 351, 359, 360
- copper dimethyl-dicyano-quinonediimine, 308
- copper phthalocyanine, 374
- Coulomb bonding, 307
- Coulomb energy, 241
- Coulomb forces, 33
- Coulomb interaction, 54, 136

- Coulomb potential, 241
 Coulomb repulsion, 29
 covalent bonding, 9
 cover layer, 368, 373, 375
 critical magnetic fields, 359
 critical pressure, 352
 critical temperature, 352, 358, 362
 crystal growth, 63
 crystal growth by electrocrystallisation, 67
 crystal growth by sublimation, 63
 crystal growth from solution, 66
 crystal growth from the melt, 65
 crystal structures, 36
 crystalline phase, 291
 crystallographic data, 37, 39
 crystals of high conductivity, 307
 Cs_3C_{60} , 352, 362
 CT absorption, 152
 CT complexes
 strong, 308, 309
 weak, 309
 CT excitation, 152
 CT excitons, 150, 152, 153
 CT state, 151
 Cu dimethyl DCNQI, 396
 Cu ions as bridges, 396
 Cu salts of DCNQI, 324
 Cu_2O , 149
 $\text{Cu}^+(\text{DCNQI})_2^{\bullet-}$, 34, 43
 CuPc, 373, 374
 optical constants, 387
 CuPc/ C_{60} , 382
 current density, 223
 current-voltage characteristic, 246
 of a solar cell, 384, 388
 of disordered films, 282
 cyclo [12] thiophene, 49

 D-A complex, 34, 42, 151
 D-A crystal, 6, 67, 151
 D-A systems, 307
 D-A-complex crystals, 39
 dark conductivity, 220, 222
 Davydov bands, 142
 Davydov splitting, 93, 126, 127, 132, 134,
 138, 142–144, 154, 195, 198, 272
 DCNQI, 7, 12, 68, 328, 396
 de Haas-van Alphen effect, 358
 deep traps, 228, 231
 defects, 75, 84, 277
 deformation-potential scattering, 270
 DEH, 281
 delayed fluorescence, 127, 139, 160, 163–
 167, 170

 delocalisation, of electrons, 15
 density of state, 273
 density of trapping states, 259
 density-response function, 319
 depletion zones, 250
 deuteration, 326
 diacetylene, 43, 46, 70
 diagonal disorder, 283
 diaryl-ethenes, 393
 dibenzothiophene, 2
 dibromo-naphthalene, 141, 146, 161, 203
 dichloro-anthracene, 149
 dielectric constant, 344
 dielectric function, 336
 differential tunnel resistance, 361
 diffusion, 90, 113, 120, 158, 235
 diffusion coefficient, 121, 158, 159, 200,
 236
 diffusion coefficient of the charge carriers,
 341
 diffusion currents, 257
 diffusion length, 159
 for triplet excitons, 202
 diffusion of triplet excitons, 200
 dimer spectra, 138
 dimerisation, 42
 dimers, 38, 134, 143, 180
 dimethyl-anthracene, 83, 110
 dimethyl-naphthalene, 83, 110
 dipolar disorder, 83, 113
 dipole layer, 250
 dipole moments
 fluctuating, 27
 dipole-dipole interaction
 electrical, 25
 discotic liquid crystals, 290
 discotic molecules, 291
 dislocations, 79
 dispersion energy, 29
 dispersion relations, 146
 dispersive forces, 27
 dispersive interactions, 36
 dispersive transport, 237, 289
 displacement current, 235
 display monitors, 366
 dissociation of excitons in photovoltaic cells,
 381, 382
 distillation, 58
 dithienyl-ethenes, 393
 donor, 34, 42, 253
 donor-acceptor complexes, 6, 34
 donor-acceptor crystals, 6, 39, 42, 83

- donor-acceptor interface in photovoltaic cells, 381
- dopants, 70, 253
- doping, 253, 277
- doping, C₆₀, 362
- drain, 401
- drift current, 257
- drift velocity, 217, 224, 225, 235
- Drude, 225
- Drude model, 225
- Drude-Lorentz model, 336
- dynamic nuclear-spin polarisation, 212
- dynamics, of triplet states, 178, 209

- EEDOR, 186
- effective band gap, 339
- effective energy gap, 334
- effective mass, 227
- effective mobility, 261, 262
- efficiency, 386
 - OLED, 370, 373
- efficiency of a solar cell, 381, 389
- efficiency of OLED
 - external, 379
- Einstein relation, 236, 275
- ejection, 248
- electrets, 15, 16
- electric-field dependence of the mobility, 269
- electroabsorption, 151
- electrocrystallisation, 67, 324, 357
- electrodes, 365
- electroluminescence, 16, 365
 - time dependence, 380
- electron acceptor, 307
- electron affinity, 34, 42, 229, 247, 307, 370
- electron distribution, 3
- electron donor, 307
- electron injection, 405
- electron spin polarisation (OEP), 204
- electron transport materials, 370
- electron-electron double resonance, 186
- electron-hole pair, 229
- electron-hole separation, 240
- electron-phonon coupling, 271, 321, 362
- electron-phonon interaction, 360
- electron-phonon scattering, 315
- electron-spin resonance, 177, 178
- electronic polarisation, 229, 231
- electronics with molecules, 391
- electrons in Alq₃, 301
- electrons in PPV, 301
- electrooptics, 366
- electroreflection, 151
- emission layers, OLED, 373
- emission spectra of a multilayer OLED, 379
- encapsulation, 368, 373
- ENDOR, 77
- energetically distributed trapping states, 297
- energy bands for electrons and holes, 273
- energy conduction, 125, 126, 140, 141, 148, 156, 159
- energy exchange, 126, 140, 141, 148, 159
- energy gap, 247, 320, 331, 360
- energy transfer, 125, 126, 140, 141, 148, 159
- energy transport, 126, 140, 141, 148, 159
- energy-level diagram, OLED, 369
- epitaxy, 50, 71
- equation of continuity, 258
- ESR, Electron-Spin Resonance, 177, 314, 328
- ESR line, 341, 343
- ESR linewidth, 196
- ESR powder spectra, 191
- ESR spectrum, 340
- ET salts, 352
- ET superconductors, 357
- evaporated films, 366
- evaporation of films, 280
- excess charge carrier bands, 272
- excess charge carriers, 228, 234, 245, 255, 257
- exchange integral, 229
- exchange interaction, 139, 143, 161
- exchange narrowing, 196
- exchange of energy, 125, 126
- excimer excitons, 156
- excimers, 38, 154–156
- excitation spectra, 220
- excitation spectroscopy, 125, 139, 161
- excitation spectrum of photoconduction, 279
- excited states, 130
 - optical, 127
- exciton annihilation, 163, 165, 167, 168
- exciton band, 142
- exciton band structure, 146
- exciton coherence, 79
- exciton diffusion, 158
- exciton dispersion relations, 145
- exciton dissociation, 244, 382
- exciton fission, 168, 169
- exciton motion, 126
- exciton states, 83
- exciton-exciton annihilation, 244
- exciton-phonon interaction, 147

- excitonic bands, 134, 139
 excitonic processes, 163
 excitonic superconductor, 352
 excitons, 13, 77–79, 90, 125, 126, 140, 141, 145, 148, 158, 159, 173
 excitons, OLED, 369
 exhaustion, 254
 exponential trap distribution, 297
 external quantum yield of a solar cell, 385

 fatty acids, 47
 Fermi energy, 227, 316
 Fermi level, 248, 258
 Fermi sphere, 226, 227
 Fermi statistics, 253
 Fermi surface, 226, 227
 Fermi velocity, 227
 Fermi wavevector, 315, 316
 field dependence of the hopping rate, 287
 field emission, 252
 field-dependent conductivity, 344
 field-dependent mobility, 258, 285
 field-effect doping, 402
 field-effect transistor, 401
 filling factor, 385, 389
 films, 8, 47, 71, 403
 structuring, 403
 fine structure, 180, 199
 fine structure of the ESR spectrum, 178
 fine-structure constants, 178, 184, 186, 188, 191, 195, 199
 fission, 168
 fluctuating dipole moments, 27, 28
 fluctuations, 330
 fluctuations at the Peierls transition, 334, 338
 fluctuations between the metallic and the semiconducting states, 334
 fluoranthene, 2, 12, 68
 fluoranthene salts, 330
 fluorene, 2, 213
 fluorescence, 128, 129, 138, 169, 220
 fluorescence spectrum, 62, 131
 force constants, 108
 forces, 25
 intermolecular, 4, 25
 intramolecular, 4, 25
 foreign molecules, 75
 free charge carriers, 223
 Frenkel defects, 78
 Frenkel excitons, 14, 15, 51, 126, 139, 150
 photovoltaics, 381
 frequency dependence of the conductivity, 344

 fulgides, 393
 Fullerene, 361
 Fullerene compounds, 362
 functional unit, 401, 406
 furane, 2

 gate, 402
 gate dielectric, 402
 Gaussian distribution function, 233
 Gaussian distribution of traps, 299
 Gaussian transport, 236
 Ge, 149
 geminate pair recombination, 241
 generation of charge carriers, 234
 glow emission, 251
 gradient sublimation, 58, 59, 65
 grain boundaries, 82
 group velocity, 273
 guest, 75
 guest molecules, 75

 Hückel LCAO-MO theory, 18, 19, 22
 Hückel model, 16
 HBL, 377
 HDQ-3CNQ, 400
 heat of sublimation, 32, 52
 Heitler-London model, 17
 herringbone pattern, 35
 heterocyclic compounds, 2
 hexamethyl-benzene, 37, 141
 HHTT, 291
 high dark conductivity, 308
 hindered rotation, 113
 historical remarks, 220, 366
 hole injection, 405
 hole transport materials, 370
 hole-burning, 406
 holes, 226
 holes in PPV derivatives, 301
 holographic data storage, 408
 holography, 408
 HOMO, 225, 229, 273
 hopping conductivity, 219, 263
 hopping frequency, 197
 hopping mechanism, 277
 hopping model, 228
 hopping processes, 147, 158
 hopping rate, 283
 hopping time, 148
 hopping transport, 282
 hot band spectroscopy, 145
 hot electrons, 241
 hybrid crystals, 51
 hybrid orbital, 18

- hydrogen bonds, 34
- hydrogen molecular ion, 16
- hydrogen molecule, 17
- hyperfine coupling, 342, 343
- hyperfine coupling of the conduction electrons, 341
- hyperfine interaction, 186, 202
- hyperfine structure, 198
- identification of traps and other scattering centres, 265
- image force, 250
- image-charge potential, 251
- impurities, 70, 75, 84, 232, 277
- inclusion crystals, 40
- incommensurate charge-density waves, 319
- indium-tin oxide, 368
- inductive forces, 26
- infrared absorption, 100
- injection, 217, 234, 247, 248, 292
 - OLED, 369
- injection barrier, 223, 249
- injection layers, OLED, 373
- injection limiting, 300
- injection of electrons, 250
- injection-limited currents, 250
- inorganic semiconductors, 122, 173
- inorganic-organic hybrid crystals, 51
- insulators, 42, 43, 217
- integrated circuits, 16
- intercalates, 255
- interfaces, 365
- interference, OLED, 373
- intermolecular forces, 4, 25
- intermolecular potentials, 30
- internal conversion, 129
- internal electric field, 365
- internal field, 247, 255
- internal photoeffect, 238
- inter-stack interactions, 327, 329
- intersystem crossing, 129, 178, 205
- intersystem crossing rate, 129
- intramolecular forces, 4, 25
- intramolecular relaxation, 241
- intrinsic charge carriers, 255
- intrinsic fluorescence, 132
- intrinsic photo-generation, 239
- inverse Peierls transition, 397
- ionic bonding, 9
- ionisation energy, 307, 370
- ionisation limit, 129
- ionisation potential, 42, 247
- Ir(ppy)₃, 373, 376
- island structures, 50
- isotope effect, 360
- isotopic mixed crystals, 75, 138
 - naphthalene – isotopic mixed crystals, 192
- ITO, 368
- Jahn-Teller instability, 188
- Josephson effect, 360
- K₃C₆₀, 352
- Lambertian source, 371
- Langmuir balance, 48
- Langmuir-Blodgett films, 36, 47–49, 72
- Langmuir-Blodgett technique, 400
- lattice distortion, 315, 320, 321
- lattice dynamics, 107
- lattice energy, 25
- lattice periodicity, 233
- lattice potential, 107
- lattice relaxation, 231
- layer-thickness dependence of the current density, 301
- layered structure, 35
- lead halides, 51
- Lennard-Jones potential, 30
- libration, 89, 93
- lifting of degeneracies, 134
- light current, 371
- light emission from bipolar field-effect transistors, 405
- light yield, OLED, 371
- light-induced phase transitions, 329, 392, 396, 400
- linewidths, 133
- local field, 259
- long-term stability, 408
- luminosity, 367, 371
- luminosity of an OLED, 365
- LUMO, 225, 229, 273
- Madelung energy, 307
- magnetic dipole-dipole coupling, 114, 181, 183
- magnetic dipole-dipole interaction, 214
- magnetic field oscillations, 358
- magnetic quantum number, 181, 190
- magnetic susceptibility, 314, 325, 328, 330, 337, 359
- mean free path, 264, 276
- mean square displacement, 236
- MeH-PPV, 373
- Meissner phase, 359

- melting point, 28
- mesogenic phase, 291
- mesogenic systems, 290
- metal-semiconductor phase transition, 315
- metallic bonding, 9
- metallic semiconductor, 326
- microwave-induced delayed phosphorescence, 207
- mini-exciton ESR, 193, 198
- mini-excitons, 134, 136, 139, 172, 192, 195, 199
- mixed crystals, 70
- mixed stacking, 309
- mixed systems, photovoltaic cells, 381
- mobilities in disordered films, 281
- mobility, 217, 224, 234, 236, 246, 258, 263, 275, 313, 404, 405
 - OLED, 370, 380
- mobility in single crystals, 217
- mobility in vapour-deposited films, 218
- mobility tensor, 268, 275
- model for the space-charge-limited currents, 257
- model of the Peierls transition, 315
- molecular conductors (wires), 395
- molecular crystals, 5, 89–91, 93, 104, 107, 110, 113
- molecular devices, 391
- molecular dynamics, 89
- molecular electronics, 16, 391
 - macroscopic, 391
 - monomolecular, 391
- molecular functional unit, 400
- molecular orbitals, 272
- molecular rectifier, 400
- molecular sponges, 42
- molecular storage units, 406
- molecular structures, 2
- molecular switch, 392
- molecular vibrations, 89
- molecular-beam epitaxy, 49
- motional narrowing, 196, 198, 341
- Mott-Gurney equation, 260
- MPMP, 218, 285, 287
- multilayer OLED, 373, 376

- nanotechnology, 366
- naphthalene, 2, 22, 34, 36, 95, 100, 143, 191, 199, 265, 268, 269
 - energy bands, 273
 - isotopic mixed crystals, 179, 205
- neutral contacts, 249
- neutron diffraction, 90
- neutron scattering, 97

- NMR spectrum, 113
- noise voltage, 344
- non-diagonal disorder, 283
- non-radiative recombination, 370, 374
- nonpolar molecules, 34
- nonpolar organic solids, 10
- normal modes, 91
- normal vibrations, 92
- NPB, 370, 373
- nuclear magnetic resonance, 113
- nuclear spin temperature, 213
- nuclear spin-lattice relaxation, 123, 200

- Ohm's law, 225, 228
- Ohmic contact, 245
- Ohmic currents, 253
- on/off ratio, 405
 - transistor, 402
- one-dimensional bands, 314
- one-dimensional behaviour, 43
- one-dimensional metal, 331
- one-dimensional metallic systems, 315, 318
- one-dimensionality, 330
- Onsager model, 242
- open-circuit voltage, 384, 389
- operating life, 367
- optical detection of magnetic resonance (ODMR), 178, 186–188, 203, 212
- optical double resonance, 212
- optical emptying of traps, 278
- optical energy gap, 231
- optical nuclear-spin polarisation, 212
- optical pumping, 212
- optical spin polarisation, 204
- optically-induced charge-carrier injection, 244
- optically-induced transient electrical conductivity, 397
- optimisation of a photovoltaic cell, 386
- orbitals, 16
- organic light-emitting diode (OLED), 293, 365, 366
- OLED principle, 368
- organic metals, 311, 325
- organic molecular-beam epitaxy, 71
- oriented gas, 10, 91, 126
- oscillator strength, 129, 134, 138, 143
- Overhauser effect, 212
- Overhauser shift, 342

- p-TS6, 47
- packing coefficient, 35
- pair spectroscopy, 163

- pantacene, 2
- paraffins, 41
- parity, 130
- Pauli paramagnet, 325
- Pauli paramagnetism, 337
- Pauli principle, 29, 226
- Pauli susceptibility, 328, 347
- PEDOT, 16, 373
 - PSS, 384
- Peierls instability, 12
- Peierls phase-transition temperature, 330
- Peierls temperature, 320
- Peierls transition, 314, 315, 318, 319, 330, 331, 397
 - theory of, 320
- pentacene, 36, 255
 - transistor, 405
- Perovskite structure, 51
- perylene, 2, 35, 38, 110, 144, 155, 217, 264, 265, 267, 322
- phenantrene, 42
- phonon dispersion relations, 96, 97, 100, 101, 106–109
- phonon energy, 30
- phonon scattering, 318
- phonons, 11, 89, 93, 94, 103, 263, 319
- phosphorescence, 128, 129, 138
- phosphorescence spectrum, 131
- photoacoustic spectroscopy, 125
- photochemical or photophysical hole-burning, 406
- photochromic switching process, 394
- photochromism, 393
 - single crystals, 395
- photoconduction
 - excitation spectrum, 279
- photoconductivity, 220, 222, 234, 265
- photoelectrets, 15
- photoelectron spectroscopy, 229
- photoexcitation, 217
- photogeneration, 234
- photogeneration of charge carriers, 238
- photon flux density in a solar cell, 387
- photorefractive organic materials, 408
- photosynthesis, 126, 171
- photovoltaic cell, 366, 381
- photovoltaic characteristics, 384
- photovoltaic effect, 365
- phthalocyanines, 381
- pinning frequency, 345
- pixels, OLED, 367
- plasma edge, 335
- plasma frequency, 336
- plastic chips, 404
- plate sublimation, 63
- PMDA, 151
- point defects, 78
- Poisson equation, 247, 258
- polar organic solids, 11
- polar substituents, 39
- polarisability, 26, 36, 230
- polarisation energy, 229
- polarisation of optical transitions, 136, 143
- polarons, 228, 229, 235
- poly-diacetylene crystals, 43, 68
- poly-(N-vinyl-carbazole), 287
- poly-para-phenylene-vinylene, 373
- polyacene crystals, 109, 231
- polyacenes, 263
- polymer films, 366
- polymer single crystals, 8, 43, 68
- polymerisation, 69
- polymers, OLED, 367
- polymers as thin films, 280
- polystyrol-sulfonate, 373
- polythiophene/C₆₀, 381
- Poole-Frenkel effect, 285, 287
- porphyrin, 381, 407
- porphyrin molecule, 42
- potentials
 - intermolecular, 30
- PPV, 370, 373, 381
- PPV polymer films, 293
- pressure
 - external, 326, 327
 - internal, 326, 327
- pressure dependence of T_c for superconductivity, 356, 357
- pseudo energy gap, 321
- PSS, 16, 373
- purification, 57
- PVK, 287
- pyrazole, 2
- pyrene, 2, 38, 42, 77, 155
- pyridine, 2
- pyrrole, 2
- quadrupole correction, 230
- quadrupole moments, 28
- quantum yield, 239
 - OLED, 372
- quantum yield of photogeneration of charge carriers, 242
- quasi-metallic state, 330, 331
- quinacridone, 373
- quinoline, 207
- quinoxaline, 2, 209, 211

- radiation characteristics, 379
- radiationless transitions, 128
- radical anions, 370
- radical cations, 253, 370
- radical-anion salts of DCNQI, 323
- radical-cation salts of the arenes, 330
- radical-ion, 42
- radical-ion crystals, 2, 3, 7
- radical-ion salts, 7, 11, 12, 33–35, 42, 43, 54, 67, 78, 153, 308, 314, 322
- radicals
 - Alq3, 374
- Raman scattering, 90, 99
- Raman spectrum, 102
- Rb₂CsC₆₀, 352, 362
- Rb₃C₆₀, 352
- reciprocal lattice, 95
- recombination, 240
 - OLED, 369
- recrystallisation, 58
- rectifier molecule, 400
- rectifiers, 392
- reentry behaviour, 329, 396
- reflection spectrum, 125, 153, 335
- relaxation of the excess charge carriers, 283
- relaxation time, 225, 227, 229, 276
- reorientation, 115, 118
- reproducibility, 303
- repulsive forces, 29
- resonance interaction, 132, 136, 143–145
- reversed Peierls transition, 346
- Richardson constant, 251
- Richardson equation, 251
- rotational vibrations, 93
- rubrene, 373
 - transistor, 405
- S-DPVBi, 373
- S-NPB, 373
- S-TAD, 373
- salts, 33
- SAM, 71
- scattering diagram, 99
- scattering of charge carriers, 227, 269
- scattering of charge carriers from charged defects, 264
- scattering of charge carriers from phonons, 264, 269
- scattering time, 228, 263
- Schottky barrier, 252
- Schottky contacts, 250
- Schottky defects, 78
- Schottky effect, 250
- scintillator crystals, 15
- SCLC, 246
- SCLC model, 258
- selection rules for intersystem crossing, 208
- self assembly, 49, 71
- self diffusion, 79, 113, 120
- self organisation, 49
- self trapping, 152, 156
- self-assembled monolayers, 52
- semiconductors, 42, 217
- semitransparent electrode, 365
- sensitised delayed fluorescence, 161
- sensitised fluorescence, 62, 157, 159, 160, 162, 170
- shallow traps, 228, 231, 258, 261
- shallow-trap distribution, 259
- short-circuit photocurrent, 384
- Shubnikov phase, 359
- Shubnikov-de Haas effect, 358
- silicon wafer, 368
- simulation of TOF transients, 285
- single-layer OLED, 370
- singlet excitons, 241
 - OLED, 370
- singlet states, 128
- singlet-singlet annihilation, 167
- singlet-triplet annihilation, 167
- SiO₂, 402
- solar cells, 366, 381
- solid-state polymerisation, 45
- solubility of dopant molecules, 254
- solvent shift, 132, 136
- sound velocity, 103, 104
- source, 401
- space charge, 228, 234, 246, 255
- space-charge-limited current, 222, 246, 255, 303
- space-charge-limited current with energy-distributed trapping states, 300
- space-charge-limited current without shallow traps / with filled traps, 300
- space-charge-limited currents in disordered films, 297
- space-charge-limited stationary currents, 255
 - in rubrene crystals, 255
 - in tetracene crystals, 257, 262
- spectral sensitivity, 386
- spectroscopic techniques, 62, 84
- spin eigenfunctions, 181
- spin exchange, 198
- spin Hamiltonian, 189, 194
- spin quantisation in triplet states, 181

- spin resonance of the conduction electrons, 339
- spin-density wave, 356
- spin-lattice relaxation, 113, 205, 211
- spin-lattice relaxation of protons, 202
- spin-lattice relaxation time, 115, 117, 118
- spin-orbit coupling, 129, 148, 183, 208, 209, 212
- spinning of films, 280
- spiral dislocations, 80
- SQUID, 359
- stacking axis, 310
- stacks, 42
 - separate, 310
- stationary dark currents in disordered films, 292
- step dislocation, 80
- stimulated emission of microwaves, 205, 211
- storage density, 408
- storage elements, 392
- structural data, 31
- structural defects, 75, 78, 231, 232
- structure of an OLED, 368
- structures, 34
- sublimation, 58
- sublimation crystals, 81
- sublimation energy, 31, 32
- sublimation enthalpy, 79
- substituents
 - polar, 39
- superconductivity, 362
 - critical temperature, 351
 - donor-acceptor compounds, 352
 - electrical resistance, 351
 - energy gap, 351, 352
 - Fullerides, C₆₀, 352
 - magnetic susceptibility, 351
 - one-dimensional, 353
 - radical-ion salts, 352
 - three-dimensional, 361
 - two-dimensional, 356
- superconductors, 351
- superlattice, 319
- superlattice reflections, 334
- supramolecular, 314
- surface excitons, 153, 154, 173
- surfaces, 12
- switches
 - molecular, 391
 - organic metals, 398
- switching speed of a transistor, 403
- switching times, 367
- tautomerism, 406
- TCLC, 298
- TCNQ, 42, 307, 311, 322
- technical applications, 16
- temperature dependence, 313, 314, 330, 331, 334, 354
- temperature dependence of the characteristic, 295
- temperature dependence of the energy gap, 339
- temperature dependence of the hole mobility, 285
- temperature dependence of the magnetic susceptibility, 337
- temperature dependence of the mean free path, 334
- temperature dependence of the mobility, 217, 264, 265, 284, 334
- temperature dependence of the real energy gap, 321
- tempering, 51
- tensile strength, 45
- tetracene, 2, 36, 126, 157, 168, 265
 - transistor, 405
- tetrachloro-benzene, 187
- tetracyano-quinodimethane, 307
- tetramethyl-tetraselena-fulvalene, 353
- tetraphenyl-porphyrin, 41
- tetrathio-fulvalene, 307
- thermally-stimulated discharge current, 277
- thermionic emission, 251, 252
- thermionic field emission, 252
- thiol end groups, 49
- thionaphthene, 76
- thiophene, 2
 - transistor, 405
- threshold field strength, 344
- time-of-flight method(TOF), 234
 - experiments on disordered films, 281
 - method, 234
 - transients, 287
 - transients in anthracene crystals, 237
 - transients in perylene crystals, 237
- TMTSF, 353
- topochemical reactions, 43
- topology of Fermi surfaces, 358
- TPTA, 289
- transfer integrals, 272
- transistor characteristics, 402
- transistors, 16, 265, 392, 401
- transit time, 235
- transition temperature, 352

- translational vibrations, 89, 93
- transmission electron microscopy, 72
- transmission losses, 372
- transparent cathodes, 368
- transport equation, 258
- transport layers
 - OLED, 373
- transport level, 229
- transport of charge carriers
 - OLED, 369
- transport properties, 334
- trap depth, 233, 262
- trap-charge-limited currents, 298
- Trap-Filled-Limit (TFL), 261
- trapping states, 258
- traps, 163, 258
- triplet emitter Ir(ppy)₃, 376
- triplet emitters
 - OLED, 370
- triplet ESR spectrum, 179
- triplet exciton fusion, 168
- triplet excitons, 143, 144, 160, 177, 187, 188, 199, 214
 - OLED, 372
- triplet mini-excitons, 177, 180
- triplet states, 128, 177
- triplet-exciton ESR, 199
- triplet-triplet annihilation, 163, 165
- triplet-triplet annihilation – magnetic-field dependence, 165
- triplet-triplet annihilation processes, 164
- TTF, 42, 307
- TTF-TCNQ, 42, 310, 313, 314, 321, 322
- TTF⁺-TCNQ⁻, 34, 308
- tunnel effect, 252
- tunnel resistance, 360
- tunnel spectroscopy, 351
- tunneling process, 395
- twinning, 39
- two-electron spin functions, 182
- two-layer systems, photovoltaic cells, 381
- two-photon spectroscopy, 130
- type I superconductors, 359
- type II superconductors, 359, 362
- ultrafast charge transfer, 382
- ultrapure crystals, 263, 265
- unimolecular rectifier, 400
- unit cell, 35
- urea, 41
- vacancies, 78
- valence band, 226, 263
- van der Waals attraction, 30
- van der Waals bonding, 9–11, 25, 104
- van der Waals forces, 27
- van der Waals interaction, 4, 109, 120
- variability, 13
- velocity of sound, 270
- vibronic relaxation, 231
- Wannier excitons, 14, 51, 149, 150
- weak CT complexes, 323
- wires
 - molecular, 391
- work function, 247, 250, 370
- X traps, 75–78, 186
- X-ray scattering, 334
- X-ray topography, 85, 86
- xerography, 221
- Y traps, 77
- Zeeman energies, 189
- Zeeman splitting, 178, 189
- zero-field components, 178
- zero-field resonance, 178, 186
- zero-field splitting, 178
- zero-field transitions, 186
- zero-phonon line, 152
- ZnSe, 375
- zone refining, 58, 59