

- EPRI 467–71, 992
 equilibrium carrier concentration 67–70
 equilibrium energy band diagram 86
 equilibrium potential 801–3
 equilibrium voltage 805, 809
 Ernst & Young Renewable Energy Unit 1105
 Ethyl Corporation process
 for semiconductor grade silicon 173–5
 simplification 198–201
 Euclides linear trough system 497
 Europe, PV programs 1097–9
 European Bank for Reconstruction and Development (EBRD) 1105–6
 European Commission DG XVII 1106
 European Investment Bank (EIB) 1106
 exchange current density 805
 excimer laser annealing (ELA) 350
 excimer laser recrystallization (ELR) 350
 experience curve 50–1
 experience factor 17, 38
 Explorer I 414
 extensive variables 114
 external collection efficiency 95
 extraction metallurgy in ladle,
 post-treatment by 196–8
 extraterrestrial applications 59–60
 extraterrestrial irradiance 915–16
 extraterrestrial radiation 913, 926

 FAC/Equities A Division of First Albany Corporation 1109
 facade systems 1014
 failed system, cause–effect diagram for 1054
 Fast Auroral Snapshot (FAST) solar array 440
 Fermi energy 68–9, 83, 88, 518
 Fermi function 68
 Fermi level 119, 529, 535
 figures of merit 444–6
 fill factor (*FF*) 309
 Final Yield 965
 financial characteristics 1077–9
 financing of PV growth 1073–115
 borrowers experience 1081
 capital requirements 1076–7
 example calculation 1082
 grid-connected residences 1079–82
 growth outlook 1075
 historical development 1073–4
 lenders issues 1081
 market drivers 1075
 organizations involved in 1100–14
 residential sector 1082
 rural areas 1083–6
 financing the PV industry 1091–2

 financial-support mechanisms 50
 fixed surfaces, irradiation on 943–5
 Flat Plate Array Project 230
 flat-plate, CIS 36
 flat-plate conventional PV modules 947
 flat-plate solar cells 268, 989
 flexible fold-out arrays 433–5
 flexible roll-out arrays 435–6
 float zone (FZ) monocrystals 205
 floating-zone technique 207
 flooded batteries 844
 flywheels 799
 foil *see* silicon ribbon and foil production
 forecasts 15–19
 long-term 18
 four-junction III-V cells 417
 Fourier Transform Infrared Spectroscopy (FTIR) 219
 Franz Keldysh effect 73
 Fraunhofer-Institut für Solare Energiesysteme 497–8
 free-carrier absorption 74
 free enthalpy 802
 Fresnel lens 36, 452–3, 462, 464, 466, 474, 485, 487–9, 496
 Fresnel module price 992
 Fresnel system 990
 front-polished and back-textured (FPBT) 329
 front-surface recombination velocity 97
 front-textured and back-polished (FTBP) 329, 331
 fuel cells 854–5
 fumed silica 159, 170
 functional silanes 160
 fundamental absorption 70

 GaAs 5, 20, 27, 60, 64, 123–4, 360, 426, 472
 back-surface fields 394
 optical properties 394
 properties at 298K 386
 window layers 394
 see also GaInP/GaAs; GaInP/GaAs/Ge
 GaAs cells 393–4, 994–7
 Ge(100) substrates 393–4
 GaAs tandem-junction cells 996
 GaAsP 360
 GaInAs 360
 GaInP 5, 20–1, 40, 426, 472
 absorption coefficient 388–9
 optical properties 387–9
 ordering in 387
 properties at 298K 386
 GaInP solar cells 383–93
 back-surface barrier 392–3
 characteristics 393