CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Index

abietane 543, 600
abietene 547
abietic acid 552, 596
abiogenic methane *see* methane
abiotic origin of life 709
abiotic oxidation 653
abiotic synthesis 601
abnormal pressure *see* overpressure
Abo Formation, USA 813
Abu Durba seep, Gulf of Suez 915
accessory pigment *see* carotenoid
accommodation 837–8
accretion disk hypothesis 709
acenaphthene 644
acetate 646, 656, 657
acetogenic bacteria (acetogens) 656
acetyl-CoA (acetyl-coenzyme A) 650, 654, 711
acid gases (H_2S and CO_2) 649
acidic catalysis 630
acidic clay minerals 533
acidophilic
acid rain 746, 748
Acinetobacter 652
acritarchs 531, 588, 714, 716, 785
actinomycete 716
Actinpterygii 724
activating hydrocarbons 650
activation energy 814, 966
active source rock 976
acyclic isoprenoids *see* isoprenoids
adamantanes 699–700
Adiyaman region, Turkey 915, 917
Adriatic Basin 527, 535, 559, 613, 705, 977
Adriatic Sea 630
aerobic biodegradation 651, 652, 658
aerobic degradation rate 650
aerobic respiration 713
Agathis 550
Agbada Formation, Niger Delta 949–51
Agelas 495
age-related biomarkers 490–1, 493, 526, 541, 573, 588, 979, 980
Aglaophyton 727
Agrio Formation, Argentina 894–5
Akata Formation, Niger Delta 573, 949–50, 951
Akilia Island, Greenland 712
akinete 796
Akkas Formation, Iraq 791
Akkas well, Iraq 791
Alagamar Formation, Brazil 846, 849
Alagoas stage 835
Alaska National Wildlife Refuge (ANWR) 896
Alberta Basin 968
Alberta tar sands 658, 700
Alberta Trough, Canada 832
albertite 478
Albinia Formation, Australia 770
Albion-Scipio Field, Michigan 722
Alcaligenes 652
Alcanar Formation, Spain 947, 948
Alexander the Great 934
algae 524, 716, 725, 777
algaenan 520, 777, 780, 928
alginite 923, 928, 936
Aliambata Well, Indonesia 529, 544
alkadienes 517
alkaline facies 923
alkaline hydrolysis 539
alkalinity 533
alkane
  alkyl-substituted 493–6
  branched (*see* isoalkane)
  degradation 651, 653, 659, 666, 669
  macrocyclic 520–1
  normal (*see* normal alkane)
alkatriene 517
alkylated benzenes 665, 670–2
alkylated monocyclic alkanes 667–8
alkylation 582
alkylbenzenes 599, 653, 654, 670, 672
alkylbenzthiophenes 798
alkylbiphenyls 665, 672
alkylcyclohexanes 668, 669, 767
alkyldibenzothiophenes 485, 798
alkyldiphenylmethanes 665, 672
alk-1-enylbenzenes 599
alkyl esters 974
alkylnaphthalenes 599, 670
alkylphenols 670
2-alkylsteranes 532–3
3-alkylsteranes 532–3
alkyl-substitued alkanes 493–6
alkyltoluenes 600
Allen Hills meteorite (ALH84001), Antarctica 602, 980
Allgäu Formation, Germany 591
Allison Guyot, Mid-Pacific Mountains 921
alloxanthin (*see* carotenoid)
alluvial facies 924
Alpine Field, Alaska 826, 883
Alps, Europe 737, 741
Al Shomou Formation (*see* Athel silicilyte)
Altamont-Bluebell Field, Utah 479, 925, 927
Alum Shale (Alunskieffer), Sweden 540, 720, 774, 777, 778
Alunskieffer (*see* Alum Shale)
Amadeus Basin, Australia 770, 783
Amal well, Gulf of Suez 915
Amazon Basin, South America 732, 802
Amborella 739
Amino acids 711, 726
Ammonifex 497
ammonites 740
ammonoids 724, 732, 745
amphibians 724, 731, 744
Amposta Field, Spain 507, 520, 947
amyrin 547
amyrone 547
Anadarko Basin, Oklahoma 604, 700, 806, 808, 809, 810
anaerobic
  activation 654
  biodegradation 653–6, 658, 667–8
  degradation rate 650
  methane oxidation 507, 509, 511, 656–7
Ancestral Rocky Mountains 731, 809
Andes, South America 735
Andic cycle 894–5

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

angiosperms 491, 493, 547, 572–3, 577, 597, 617, 697, 699, 724, 729, 730, 736, 737, 738–9, 741, 942
Angola Basin, Africa 850, 935
Anguille Formation, Gabon Basin 850
anhydrite 487, 584, 946
animals 716–19, 744
  air-breathing 723
anoxia 499, 500, 561, 725, 744, 748, 749, 750, 774, 814, 892
anoxic *see* anoxia
anoxic carbonate 569
Antarctica 740, 742
Antares Field, Alaska 826, 827
anteisoalkanes 493
Antelope Shale, California 679
Antes Shale *see* Utica Shale
Anthocerophyta (Hornworts) 726
anthracene 834
anthrasteroids 586
anthraxolite 478
antioxidant 500
Antofagasta Province, Chile 688
Antrim Shale, USA 803
ANWR *see* Alaska National Wildlife Refuge
apatite 712
apatite fission track 686, 752
Apex Chert, Australia 712
API gravity 619, 631, 641, 658, 659, 660, 662, 663, 666, 706, 707
  see also American Petroleum Institute
Appalachian Basin, USA 803, 805
Appalachian Mountains, USA 731
Apsheron Peninsula, South Caspian 648
Apulian Block, Mediterranean 830, 831
Apure Basin, South America 907, 908
aquifer 702
Aquifex 497
Aquinet Ouernine (*see* Tanezzuft Shale)
Arab D, Saudi Arabia 860, 864
Arabian Basin 855, 859
Arabian Plate 855
Arabian Platform 859, 860, 861, 862
Ara Group, Oman 526, 771
Aramachay Formation, Peru 825
Arang Formation, Natuna Sea 941
Araripe Basin, South America 834
Araucariaceae 550, 551, 596, 600
arborinone 577
archaea 497, 498, 499, 511, 599, 647, 656
  lipids 503, 504–5, 506
archaeal acids 505–6
archaeal alcohols 505–6
archaeal lipids 928
archaebacteria *see* archaea
Archaefructus 572, 739
archaeocyathid 720, 747, 749
Archaeoglobus 648
Archaeopteris 728
archaeopyle 714
Archean Eon 711–14, 763
Archean petroleum systems 755–64
archenteron 717
archeols 510, 511, 957, 961
archosaurs 733
Ardennes 723
Ardjuna Basin, Indonesia 931
Ardmore Basin, Oklahoma 604, 700
Åre (Hitra) Formation, Norway 827–8
argon 749, 750
Arkoma Basin, USA 809
armored fish 721
Aroh well, Niger Delta 950
aromatic derivatives of the fernane/arborane series 592–3
aromatic dinosteroids 490
aromatic hopanoids 580
aromatic hydrocarbon UCM *see* unresolved complex mixture
aromatic hydrocarbons (aromatics) 477, 594, 596
aromatic pseudo-reactions 975
aromatic steroids 665, 698–9, 798
aromatization 582, 586, 612
aromatization-isomerization (AI) diagram 968
aromatized C_{31} 8(14)-secohopanoid 588
Arrhenius constants (*see* rate constants)
Arrhenius equation 968
Arrhenius plot 967
Arthrobacter 681
Arthropleura 731
Arthur Creek Formation, Australia 774, 777
aryl isoprenoids (trimethylbenzenes) 485, 593, 780, 781, 798, 801, 811
Ashgill mass extinction 743, 749
Asmari Limestone, Iran 929
Aspen Shale, USA 900
asphalt
  Madagascar 680
  Malagasy 675, 685
asphaltenes 477, 479, 658
asphaltite 907
Asri Basin, Sumatra 939
assemblage A 779, 780, 783, 784, 788
assemblage B 779, 780, 788
Assiniboine Member, Favel Formation, Canada 903
Asteroxylon 727
Astrosclera 495
Asuka-881458 *see* carbonaceous chondrite
asymmetric carbon atom 556
Athabasca heavy oil, Canada 475, 645
Athabasca tar sand 544, 678
Athel silicilyte (Al Shomou Formation) 771, 772
atisane 490, 543, 551
atisene 550
Atlantic Ocean 736, 737, 738
atmospheric pressure chemical ionization (APCI) 603, 605
Atoka limestone, USA 732
atomic H/C 777
atomic H/C vs. O/C *see* van Krevelen diagram
atomic S/C 563
Austin Chalk, USA 882
Austral Basin, Argentina 894
authigenic carbonate 510
automated data inquiry for oil spills *see* oil spills
autoscale preprocessing 480
autotroph 711
Avalonia 722
Avilé Member, Argentina 895
Azerbaijan 932
Azile Formation, Gabon 849, 852

Bachaquero Field, Venezuela 911
Bach Ho Field, Vietnam 648, 939, 940
Bachu Uplift, China 785
Bacillus 649, 652
bacterial sulfate reduction (BSR) 815, 946
bacteriochlorophyll
  a and b 499
  d 605, 606
bacteriohopanepolyols 552, 588
bacteriohopanetetrol 552, 566
bacterivorous ciliates 576
Baghewala well, India 500, 530, 566, 567, 772
Bahamas Basin, Florida 879
Bahia Sul Basin, Brazil 847
Baikalian tectonic event 768
Bakken Shale, USA 477, 803–5
Bakr Field, Saudi Arabia 864, 865
Baku, South Caspian 934, 935
balanced-fill lake 817, 837, 838, 840, 844, 845, 846, 858, 923
Balcones Shale, Peru 930
Balikpapan Formation, Mahakam Delta 950–7
Balingian Delta, Borneo 942
Baltica 715, 719, 720, 722, 723, 730
Bambui Formation, Brazil 768
Banded Iron Formation (BIF) 712, 714
Banff Formation, Canada 803

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

bangiophyte 716
Bangladesh Basin 920, 922
Banuwati Shale, Sumatra 939
Baragwanathia 727
Baram Delta, Borneo 942
Barents Sea, Norway 483, 648
Barentsia 722
Barinas Basin, Peru 908
Barnett Shale, USA 813
Barney Creek Formation, Australia 765, 766, 767
Barreirinha Formation, South America 725, 802
Barreirinhas Basin, South America 837
barrels of oil equivalent (BOE) 756–7
Barrow Arch, Alaska 826
Barrow-Dampier Basin, Australia 874
Barrow-Prudhoe oil family 826
Barrow-Prudhoe oils 898
Barrow Sub-basin, Australia 563, 875
basement rocks 939
basin and range, USA 929
Baston Field, Texas 687
Bata Formation, Jordan 791
Bay of Campeche, Gulf of Mexico 878, 879
Baykit High, eastern Siberia 767
Bazhenov Formation, western Siberia 619, 681, 736, 888
Bazhenov-Neocomian(!) 755
Beatrice Oil, North Sea 477, 522, 523, 525, 526, 527, 528, 561, 583, 584, 794, 795, 884
Beaufort–Mackenzie Basin, Canada 580, 959–60
Bedo Formation, Africa 791
Be'eri Sulfur Mine, Israel 571, 572
Beggiatoa 562, 715, 945
Békés Basin, Hungary 947
Belait Formation, Brunei 943
belemnites 740, 745
Belle Fourche Formation, USA 901
Belluno Trough, Italy 830, 831
Belut Formation, Natuna Sea 941
Bemidji, Minnesota 669
Benakat Shale, Sumatra 939
Benin Formation, Nigeria 949
Ben Nevis Field, Newfoundland 888
Ben Nevis Formation, Jeanne d'Arc Basin 686
Benue Trough (Basin), Nigeria 579, 837
benzene 650, 658
  biodegradation 652, 654, 659
benzo(a)pyrene 602
benzocarbazole ratio 966
benzocarbazoles 966
benzo(e)pyrene 746
benzo[g,h,i]perylene 746
benzohopanes 588, 798
benzoic acids 702
benzoperylene 602, 750
benzopyrene 750
benzothiophenes 485, 562, 672
benzothiophenic acids 653
benzoyl-CoA (benzoyl-coenzyme A) 654
benzylsuccinate 654
benzylsuccinic acids 702
Bering Land Bridge 743
Beryl Complex, North Sea 884
Beta Field, California 563
betulinic acid 580
betulins 572, 580
beyerane 490, 543–51
beyerene 550
bicadinane maturity index (BMI) 626
  BMI-1 621, 622, 624, 627
  BMI-2 621, 624
  BMI-3 621–2, 624
bicadinanes 485, 547, 548, 549, 620, 621, 622, 624, 739
bicadinanes/hopane 549
bicadinane T/(bicadinane T + hopane) 549
bicyclic diterpanes 541–7
bicyclic sesquiterpanes 540–1, 542
bicyclic terpanes 668–70
BIF *see* Banded Iron Formation
Big Horn Basin, Wyoming 815
Bighorn Group, North America 805
biocide 649
biodegradation 535, 645–705
  aerobic 658
  bitumen 702
  branched alkanes 665, 666–7
  coal 702
  anaerobic 658, 669
  effects on petroleum composition 658–64
  kerogen 702
  methane 656–7
  oil seeps 704–5
  parameters 664–705
  quasi-sequential 661, 664
  scale 660, 661, 672, 701, 703
  sterane versus hopane 685
biofilm 982
biogenic CO_2 664
biological marker *see* biomarkers
biological oxygen demand (BOD) 725
biomarker biodegradation scale 661–2, 664, 666, 670, 674
biomarker kinetics 966
biomarker maturation index (BMAI) 629–30
biomarkers (biological markers, molecular or chemical fossils) 476
  age-related 490–3, 980
  extraterrestrial 980–2
  oldest indigenous 714
  Proterozoic rocks 765
  source-dependent 476
  taxon-specific 491
biomass 504–5, 725, 729, 730, 749, 764
biomineralization 716
biopolymer 517, 548
bioremediation 662
biosphere 647
biosurfactant 646
biotic *see* biogenic
biphenyl cyclization 975
biphenyls 593, 673, 816, 817
biphytane (bisphytane) 498, 504, 506, 507
biphytanediol 506
biphytanol 506
birds 736
Birdhead Formation, Australia 736
Birkhead Formation, Australia 873, 874, 895
bisabolene 582
25,30-bisnorhopane 675, 677, 678, 680, 689
28,30-bisnorhopane (BNH, 28,30-dinorhopane) 485, 561–3, 581, 611, 618–19, 678, 686, 945, 960
29,30-bisnorhop-17α-hopane 562, 691
24,28-bisnorlupane 581, 699
bisnorlupane/hopane 580
23,28-bisnorlupanes 485
28,30-bisnorlupanes 580
bisphytane *see* biphytane
Bitter Springs, Australia 716, 770
bitumen 477, 608
bituminites 816
bivalves 733
Biyang Basin, China 575
Blaa Mountain Group, Canada 825
Black Band Unit, UK 738
Black Rock Member, Falkland Islands 812
Black Sea 508, 519, 594, 657
black shale 770
black shale facies *see* Green River Formation
Black Warrior Basin, USA 809
Blake Nose, DSDP Site 390, North Atlantic 890
Blanca Lila Formation, Argentina 946

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Blankenship Member, Alaska 883
Blueberry Debolt oils, Western Canada Basin 610
Blue Hill Shale, USA 901
Blue Mountain Shale, Canada 788
Buller Coal, New Zealand 573
BNH *see* 28, 30-Bisnorhopane
(BNH + TNH)/hopanes 618–19
boat conformation 564, 569
BOD *see* biological oxygen demand
BOE *see* barrels of oil equivalent
boghead coal 517, 597
Bohai Basin, China 538, 540, 772, 926, 928, 965
Bohemian Massif, Czech Republic 764
bolide 764
  impact 745–7, 749, 750
Bolivar Coastal Fields, Venezuela 695
Bombay Basin, India 741
Bonaparte Gulf Basin 809
Bonarelli Horizon, Europe 738
Bone Spring Formation, USA 813
Bonny Light oil 653
Boreal Ocean 899, 901
Borglum Formation, North Sea 885
Borsk (Pilsk) Formation, Russia 941–2
Boscan Field, Venezuela 603, 605
botryals 495
botryococcanes 484, 487, 490, 507, 516–18, 812, 930, 937
botryococcenes 516, 517, 812
Botryococcus 487, 493, 516–18, 520, 600, 721, 780, 784, 810, 812, 844, 853, 895, 926, 936, 939, 945, 948
  race A 496
  race B 812
  race L 519
  rubber 518
Boundary Creek Formation, Canada 959
Bowen Basin, Australia 702
brachiopods 724, 733, 747
brackish 488, 489, 838
Brainard Formation, USA 788
branched alkane 666–7
BraNobel 935
Brazilian oils 856
breccia 523, 527, 529, 574, 668, 830
Brent Formation, North Sea 885
Bridge Creek Limestone, USA 901, 903
Bright Angel Shale, Arizona 771
Brookian Sequence, Canada 959–60
Brooks Range, Alaska 812
Brora Beach, Scotland 523, 527, 529, 561, 574, 668
Brora Coal, Scotland 574
Browne Formation, Australia 770
Brown Limestone, Gulf of Suez 738, 915, 916
Brown Shale *see* Pematang Brown Shale
Brunei oils 624
Brushy Canyon Formation, USA 813, 814
Bryophyta (mosses) 724, 725, 726, 727
bryophyte *see* Bryophyta
bryozoans 720, 733
BSR *see* bacterial sulfate reduction or bottom-simulating reflector
Buah Formation, Oman 771, 772
Buckner Anhydrite, Gulf of Mexico 877
Bucomazi Formation, West Africa 575, 604, 841–2, 843, 844, 845, 853, 858
Bunte Breccia, Germany 830
Buracica Stage, 835
Burgan Formation, Arabian Platform 867
Burgan Rumaila High, Kuwait 863, 864
burial history chart 751, 753
butane 664
butanoyloxyfucoxanthin *see* carotenoid

C_{27}–C_{28}–C_{29} distribution *see* ternary diagram
C_{30} *ent*-isocopalane *see* tricyclohexaprenane
C_{30}-sterane index 527–30
C_{30} tetracyclic polyprenoids *see* tetracyclic polyprenoids
Caballos Formation, Colombia 908
Caballos Formation, South America 738
Cabinda, Angola 853
Cache Creek Formation, USA 733
cadalene (1, 6-dimethyl-4-isopropylnaphthalene) 582, 596, 597, 624, 981
cadinanes 490, 547–9
cadinene 548, 582
cadinol
calamenene 981
calamites *see* sphenopsid
Calcaires en Palquettes Formation, Jura, France 495
calcite 479, 533
  spurs 816
Caledonian Mountains 723
Cambay Basin, India 920
Cambay Shale, India 920
Cambrian explosion 718, 747
Cambrian paleo-plate reconstruction 719
Cambrian Period 719–20, 771
Cambrian source rocks 774–7
camphene 981
camphor 981
Campins Basin, Spain 945
Campos Basin, South America 835, 842–3, 846, 847, 852
Candeias Field, Brazil 842
Canning Basin, Australia 511
Canol Shale, Canada 725
canonical variable (CV) 499, 500, 569, 939
Canyon Formation, USA 813
Carapita Formation, Venezuela 942
Caravaca, Spain 746
carbocation 583
carbohydrates 725
carbonaceous chondrite 601, 711, 746, 750, 981
carbonate
  anhydrite 569
  clay ramp 861
  evaporite 555, 808
  oils 915
carbonate ramp intershelf system 861, 862
carbonate rock 487, 499, 613, 629
carbonate source rock *see* source rock
carbon cycle 724
carbon dioxide (CO_2) 919
Carboniferous coals 729
Carboniferous (Early) paleo-plate reconstruction 730
Carboniferous (Late) paleo-plate reconstruction 731
Carboniferous Period 730–2
Carboniferous source rocks 776, 807–12
carbon isotope ratio ($\delta^{13}C$) 510, 657, 749, 750
carbonium ion *see* carbocation
carbon preference index (CPI) 490, 493, 641–2, 781, 783
carboxylic acids 701
carcinogen 602
Cariaco Trench, Caribbean Sea 508, 518
Carlile Shale, USA 901
Carnarvon Basin, Australia 595, 597, 875
Carneros oil, California 585, 616
β-carotane (perhydro-β-carotene) 483, 485, 487, 521–4, 527, 593, 594, 796, 817, 818, 921
carotene 483, 522, 523, 593, 594, 726
carotenoid 521–4
Carpathian Mountains, Europe 947
Carpentaria Basin, Australia 905
Carrizo Field, Peru 930, 932, 933
Casablanca Field, Spain 947, 948
casbene 541

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Caspian basins 742
Cassiporé Basin, Brazil 847
castaprenols 589
catabolism 661, 670
catagenesis 580, 608
Catalan oil shale, Spain 945–6
catalase 713
Catatumbo Basin, Venezuela 907
Cat Canyon Field, California 945, 946
catechol 650, 652
Catlin oil shale plant 931
Cavone Field, Italy 824
CDT (*see* Canyon Diablo Troilite)
Ceará Basin, South America 837, 846, 847, 849
cell-surface hydrophobicity 653
cellulose 725, 726
cembranoid diterpanes 538–40, 541, 542
cembrene 541, 542
Cenomanian–Turonian transgression and oceanic anoxic event (OAE 2) 890, 908, 909, 911
Central Atlantic Magmatic Province 748
Central Atlantic Ocean 734, 735
Central Basin Platform, USA 812
Central Brooks Range, Alaska 826
Central Colorado Trough, USA 810
Central Graben, North Sea 884
Centralian Superbasin, Australia 774
Centralian Supergroup, Australia 770
Central Saudi Arabian oils 631
centroid clustering 480
cephalopod 724, 736
Cerdanya Basin, Spain 945
Cerro Negro, Venezuela 668
certainty of correlation 751
Chacra Group, Peru 930
chain elongation 655
Chainman Shale, USA 732, 807
chair conformation 564, 569
Chaishiling Formation, China 871
chalcocite 815
chamaecydin 546
Charales 724, 726
Charco Bayo Field, Argentina 895, 896
charcoal 750
charge 475
charophytes 724, 725–6
Chattanooga Shale, USA 725, 803, 805
Chaunlinggou Formation, China 714
cheilanthanes *see* tricyclic terpanes
Chela Formation, Africa 841, 845
chemical fossil *see* biomarker
chemical ionization (CI) *see* ionization
chemoautotroph 562
chemocline 594, 749
chemometric analysis 479–82
Cherokee Shale, USA 732
Cherry Canyon Formation, USA 813
chert 712, 716, 727, 771, 796, 909, 917
Chiapas-Tabasco Basin 878
Chicxulub Impact Crater, Yucatan 738, 745, 747, 883
Chimney Rock Shale, Paradox Basin 810
Chira Formation, Peru 930, 932
Chloranthaceae 739
Chlorella 777
chlorite 479
chlorobactane 593
Chlorobactene 593
Chlorobiaceae (green sulfur bacteria) 496, 593, 603, 604, 605, 606, 797, 801
chlorococcalean algae 561
chlorophycean algae 716, 928
chlorophyll
  chlorophyll a 499, 606, 726
  chlorophyll b 726
  chlorophyll c 603
  chlorophyll d 603, 604
Chlorophyta 561, 725
chloroplast 716
5α-cholestanol 535
5α-cholest-5-en-3β-ol *see* cholesterol
cholest-5-en-3β-ol 525
cholesterol (5α-Cholest-5-en-3β-ol) 713
Chonta Formation, Peru 561, 738, 907, 908
C_{35} hopane index *see* hopanes
chordate 717
Chorhat Sandstone, India 718
Chromatiaceae (purple sulfur bacteria) 593
chromatography *see* gas or liquid chromatography
chromium isotope ratio 745
chronostratigraphic unit 951
chrysenes 479
chrysophyte algae 527, 561
Chuar Group, Arizona 530, 540, 576, 771
cigarette smoke 602
Cimmeria 735
cladoxylate 728
cladoxylophyte 728
Clara Group, UK 720, 774
Clarkia Formation, Idaho 547, 579
clay 562, 629
Clearfork Formation, USA 813
Cleopatra 915
climate 837, 841
Clinograptus 722
Clinograptus Shale, Europe 777
cluster distance 481
Cnidaria 717
coal 551, 811, 837, 870, 950, 955
coalbed methane 902
coal/resin source rock 499, 500
coccolithophorid (coccolithophore) 526
co-elution 613
coenzyme Q *see* ubiquinone
Coetivy Island, Seychelles 873
Cold Lake heavy oil, Canada 645, 667
cold seep 497, 509, 510, 511
Colechaetales 726
Collingwood Member, Lindsey Formation, Canada 779, 785
collision-activated decomposition (CAD) 612
Colorado Shale, USA 900
Colpachucho Formation 801
Columbus Basin, Venezuela 907
Colville Basin, Alaska 812
Colville Delta, Alaska 826
comets 709
compound-specific isotope analysis (CSIA)
  correlation 476
  meteorites 981
  porphyrins 603
condensates 478
Condor Oil Shale, Hillsborough Basin, Australia 518
configurational isomerization *see* stereoisomerization
conformation 556, 564, 569
Congo Basin, Africa 841, 935
Congo Delta 850
congressane *see* diamantane
conifers (Gymnosperms) 539, 544, 547, 551, 577, 592, 596, 597, 600, 728, 729, 730, 731, 733, 736, 739
coniferophytes 578
conifer resins 547
conodont 744, 747
contamination 599
  bitumen and oil 964
  meteorite 602, 981–2
  rock 764
continental crust 709
conversion factors 762
Cook Inlet, Alaska 833–4
Cooksonia 724, 727
Cooper Basin, Australia 596, 702, 820, 821, 822, 874
coorongite 517
Copacabana Formation, South America 811
copper 814, 816
Coquinas Sequence 843
coral 539
cordaites *see* gymnosperms

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Corg *see* total organic carbon
Cormorant Field, Australia 540
Cormorant Field, UK 886
Cornbrash Formation, UK 875
coronene 602, 746, 750
Corynebacterium 652
cosmic rays 745
cotyledon (seed leaf) 738
CPI (*see* carbon preference index)
cracking reactions 612
Crenarchaeota 503, 505
Cretaceous mass extinction *see* Cretaceous–Tertiary boundary
Cretaceous oceanic anoxic events 889–93
Cretaceous Period 736–8
Cretaceous paleo-plate reconstruction 737
Cretaceous source rocks 823, 907
Cretaceous–Tertiary (K–T) boundary 602, 740–1, 745, 746, 747, 749, 764, 883
Cretaceous-Tertiary paleo-plate reconstruction 737
C-ring monoaromatic steroids *see* monoaromatic steroids
crinoids 721
critical moment 753, 754, 789
crocetane 484, 502, 507–10, 511, 657
crocetene 509
crocodiles 736
crustal stretching (β) 967
β-cryptoxanthin *see* carotenoid
Crytograptus Shale, Europe 723
CSIA (*see* compound-specific isotope analysis)
C_{27}Ts *see* Ts
C_{29}Ts 552, 564, 565, 581, 617
C_{29}Ts/(C_{29} hopane + C_{29}Ts) 617
C_{30}Ts 581, 613
Cunaloo Member, Australia 875
Cupressaceae 547, 550, 551, 600
curcumene 981
Curimã Field, Brazil 846, 849
Curtis Sea, Utah 834
Curtisite 479
Curuá Group, Amazonas Basin 802
cuticle 724, 725
cutin 725, 727
Cuu Long Basin, Vietnam 938, 939
Cuyo Basin, Argentina 893
cyanobacteria 494, 569, 712–14, 725, 781, 784
cyanobacterial mats 493
cycads 730, 733
cyclicity of extinctions 747
cyclization 582
cycloalkane (naphthene, cycloparaffin) 650
cycloalkanoporphyrin (CAP) 604–5
cyclohexane 651, 668
cyclohexyl alkane 485
cycloparaffin *see* cycloalkane
cyclopentadecane 521
cyclothem 731, 736
p-cymene 582
Cymric Field, California 646, 679, 680, 682, 683, 684
Cytochrome 714
Cytophaga 652

Dacrydium 550
Dadas Formation, Turkey 791
Daekhurin Formation *see* Pilenga Formation
Dagong Field, China 628
Damar Field, Sumatra 517
Damborice Well, Czech Republic 538, 566, 586, 636, 637
Dameigou Formation, China 871, 872
dammar resin 548, 622
Daqing Field, China 904, 905
Dead Sea, Eastern Mediterranean 503, 512
Dead Sea asphalt 672, 917
Deadwood Sandstone, Williston Basin 789
dealkylation 582
Dean Formation, USA 813
de-A-steroidal tricyclic terpanes 696
Debolt Formation, Canada 807
decarboxylation 582, 700
Deccan Traps, India 748, 920
Decorah Formation, USA 540, 765, 780, 781, 783
Deep Sea Drilling Project (DSDP; later called Ocean Drilling Program, ODP) 889, 921
Deer-Boar(.) hypothetical petroleum system 753, 754, 961–3
degraded aromatic diterpanes 596
degradation index 909
dehydration 582
6,7-dehyroferruginol 546, 547
dehydrogenation 582
Delaware Basin, Texas 809, 810, 812, 813
Delaware Mountain Group, USA 813
Delle Phosphatic Member, Nevada 807
delta log R 755
demetallation 602
demethylated D-ring aromatized 8, 14-secohopanes 693–5, 798
demethylated hopanes *see* 25-norhopanes, 28,30-bisnorhopane, 25, 28, 30-trisnorhopane
demethylated tricyclic terpanes 694, 695
dendrogram, HCA 480, 481
Dengying Formation, China 772
Denver Basin, Colorado 478, 810
deoxophylloerythroetioporphyrin (DPEP) 602
deoxyribonucleic acid (DNA) 711, 715, 726
Derdere Formation, Turkey 915
des-*A*-triene 593
des-E-hopane 559
16-desmethylbotryococcane 484, 516
10-desmethylhopanes *see* 25-norhopanes
desmethylhopanes 561
desmethylsteranes 527
desmethylsterols
Desulfosarcina 657
Desulfosarcinales 657
Desulfotomaculum 647
Desulfovibrio 648
deuterostomes 717
Devonian–Carboniferous boundary *see* Devonian–Mississppian boundary
Devonian mass extinction 743, 746
Devonian-Mississippian boundary 747, 797–8, 799, 803
Devonian paleo-plate reconstruction 723
Devonian Period 723–5
Devonian source rocks 776, 794–807
Dezful Embayment, Iran 741, 855, 867, 928, 929
Dhahaban Formation, Oman 526, 772, 775, 966
Dhruma Formation, Saudi Arabia 860, 864
Diacholestanes 537
dia/(dia + regular) C-ring monoaromatic steroids 584
diadinoxanthin *see* carotenoid
diagenesis 580, 603, 608
diahopanes (C_{29}*–C_{34}*) 564, 565, 696
17α-diahopane/18α-30-norneohopane (C_{30}*/C_{29}Ts) 563
diamantane (Congressane) 700
diaminopimelic acid (DAP) 720
diamond anvil 649
diamondoids 611
  biodegradation 699
diaromatic bicadinane ratios 624, 626
diaromatic carotenoid 801
diaromatic secobicadinane 620

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

diaromatic secobicadinane ratio (DSR) 622, 623, 627
diaromatic 8(14)-secohopane 589
diaromatic secotricadinane 620
diaromatic tricadinane ratio (DTR-1, DTR-2) 623, 627
diaryl isoprenoids 593
diasterane index *see* diasteranes/steranes
diasteranes (rearranged steranes) 485, 500, 662
  biodegradation 665, 675, 676
  C_{27} diasteranes 500
  C_{30} diasteranes 561
  20S/(20S + 20R) 631
diasteranes/steranes 483, 533–6, 617, 630–1, 856
diasterenes 533, 535, 630
diatomaceous 742, 942
Diatomaceous Zone, South Caspian 932, 934
diatomite 958
diatoms 491, 492, 512, 513–16, 526, 538, 607, 725, 859, 917, 943
dibenzo[a,h]fluorene 479
dibenzofuran 816
dibenzothiophenes 651, 672
Dicellograptus 722
Dicellograptus Shale, Scandanavia 777
dicot *see* angiosperm
Dicroidium 578, 733
Dictyonema Shale, Estonia 777
diesel 668
diether lipids 497, 503–5, 506
dihydro-*ar*-curcumene 582, 596, 670–1
dihydrophytol 499
Dillinger Ranch Field, Wyoming 814
dimer 547
dimethylalkane 493, 494
dimethylbiphenyls 672, 973
23,24-dimethylcholestane 485
17α, 18-dimethyl-des-E-hopane 572
2,6-Dimethylheptane 497
dimethylnaphthalene ratio (DNR, DMN, DBR, DPI) 625, 643–4, 671, 672, 974
dimethylnaphthalenes 643, 670, 973, 974
  1,6-dimethylnaphthalene 596, 624
  1,8-dimethylnaphthalene 644
12,17-dimethyloctacosane 497
13,16-dimethyloctacosane 494, 497
1,7-dimethylphenanthrene (DMP) 582, 596
dimethylxanthones 673
Dinaric Alps, Europe 947
Dingo Claystone, Australia 736, 821, 874, 875
Dingo Gas Field, Australia 770
dinoflagellates 491, 526, 531, 561, 588, 843, 859, 926
  bloom 483, 487
  cysts (hystrichospheres) 491, 588, 714, 919
28,30-dinorhopane (DNH) *see* 28, 30-bisnorhopane
dinorlupanes 697
24,25-dinorpentene 593
dinosaurs 736, 737, 740, 744, 745
dinostanol 531
dinosteranes 483, 485, 490, 491, 528, 531–2, 588, 859
dinosteranes/(dinosteranes + 3β-methyl-24-ethylcholestanes) 787
dinosteroid 491
dinosteroids/(dinosteroids + 3-methyl-24-ethylcholestanes) 787
dinosterol 483, 531, 588
dipentene *see* limonene
diphenylmethane 673
diphenylethane 673
diploid *see* sporphyte
diploptene 509, 552
diplopterol 552, 957, 960
Dipterocarpaceae 547, 620, 621, 624, 942
discriminant analysis 487, 983
disproportionation 582
diterpanes 543, 544
Diyab Formation, United Arab Emirates 863, 864, 866
DNA *see* deoxyribonucleic acid
Doba Basin, Chad 837
dodecane 654
dodecylsuccinic acids 654
Doig Formation, Canada 735, 825
dolichols 498
Dolni Lomna well, Czech Republic 538, 541, 566, 586, 636, 637
dolomite 575, 772, 783, 788, 794, 824
Domanik Basin, Russia 725
Domanik Shale, Russia 798, 799–800
Dong Ho, Vietnam 939
Dongying Depression, China 926
Dotternhausen Quarry, Germany 500, 829
Douala Basin, Cameroon 502, 851
Douglas Creek Formation, Uinta Basin 923
DPEP *see* deoxophylloerythroetioporphyrin
DPEP/etio 635
Drake, Colonel Edwin L. 934
Draupne Shale, North Sea 736, 827, 885
drepanophyte 727
drilling mud 479, 649, 671
drimane 540–1, 542, 552, 597, 670
Dry Piney Field, Wyoming 814
Duchesne River Formation, USA 479
Dukham Formation, United Arab Emirates 863, 864
Dunaliella 522
Dun Caan Shale, Scotland 970
Dunlin Formation, UK 885
Duri Field, Sumatra 518, 519, 520, 936
Duvernay Formation, Canada 725, 801, 802, 970
Duwi Member, Middle East 915
dysoxic *see* suboxic

Eagleford Formation, USA 881
Eagle Mills Formation, Gulf of Mexico 877
Early Proterozoic petroleum systems 764
Early Toarcian anoxic event 829–30
East African interior rift basins 853
East Berlin Formation, Connecticut 616
Eastern Drava Depression, Croatia 947
East Greenland 810–11
East Shetland Basin, UK 886
East Texas Basin 880
East Texas Field 881
east Texas oil boom 688
East-Zeit well, Gulf of Suez 915
EASY%R_o 611
echinoderms 717
ectothermic (cold-blooded) 733
Ediacara fauna 717, 718, 719, 747
Ediacara Hills, Australia 716
Eel River Basin, California 587, 618, 634
effective source rock 608
Egret Member, Rankin Formation, Newfoundland 686, 736, 887, 888–9
Egyházaskeszö Crater, Hungary 948
Eh 533, 604, 617, 630
eigenvector 480
  analysis *see* principal component analysis
Elko Formation, Nevada 526, 576, 929–30
Elk Point Basin, Canada 796–7
Ellesmerian(!) 825, 883
electron
  acceptor 646, 655
  donor (food) 646
  impact (EI) *see* ionization
Elenburger Formation, USA 813
Elika Formation, Iran 861
embryo 726
Emeishan-Panjal Volcanics 748
endosymbiotic hypothesis 715
endothermic 735

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Ene Basin, South America 812, 813
Ene Formation, Peru 812, 813
enhanced oil recovery 647
Enteromorpha 513
Enterophysalis 779
Eocene–Oligocene boundary 747
Eocene paleo-plate reconstruction 740
eoembryophytic 727
eotracheophytic 724, 727
epicuticular wax 493
Epiya well, Nigeria 855
Equaluik oil, West Greenland 692
equilibrium reactions 610
Equisetum (horsetail) 728, 736
Eromanga Basin, Australia 596, 820, 821, 873, 874, 895, 905
Escabana Trough, Gorda Ridge, Pacific Ocean 964
Escherichia 720
Espírito Santo Basin, South America 835
ester decomposition 974, 975
estimated ultimate recovery (EUR) 736, 738, 955
Estonian oil shale 520
ethane 664
ether bond 504
ether-bound lipids 496
ether-bound methylated alkanes 496–7
ethylbiphenyls 672
24-ethylcholest-5-en-3β-ol 525
ethylnaphthalene isomer ratio (ENR) 643–4
10-ethyl-2,6,15,19-tetramethylicosane 511
etioporphyrin 602
ETR (extended tricyclic terpane ratio) *see* tricycylic terpanes
eudesmane 485, 540–1
eukarya *see* eukaryote
eukaryote 713–6
  oldest multicellular fossils 716
Eumeralla Formation, Australia 904–5
Euphorbiaceae 577
euphotic zone *see* photic zone
euphylloophytes 724
Euramerica *see* Laurussia
Eurasia 734, 735, 811
Europa 716
eustatic sea level rise 774
eutracheophyte 724, 727
euxinic 892
evaporite 744, 845
even-carbon preference *see* carbon preference index
events chart (timing-risk chart) 752, 754
Excello Shale, USA 732
exopolymer 713
exploratory data analysis (EDA) 480
Exshaw Formation, Alberta 477, 725, 803–5, 808
extended hopanes (*see* homohopanes)
extended tricyclic terpane ratio (ETR) *see* tricyclic terpanes
extraterrestrial biomarkers 980–2
Exuma Sound, Bahamas 713

Fahud Salt Basin, Oman 855, 859, 867
Fairport Chalk Member, USA 901
Falciferum zone 828, 829, 891
Falkland Plateau, South America 837
Farewell Formation, New Zealand 918
farnesane 606
farthest neighbor clustering 480
fatty acids
  C_4–C_{14} 701
fermentation 498
fernanes 577–8
fernenes 577–8, 592, 593
fernenol 577
Fernie Formation, Canada 830, 832
ferns 579, 724, 728, 729, 731, 733
Ferrar Province, Gondwana 829
ferrocenecarboxylic acid 670
ferruginol 546, 547
ficaprenols 589
fichtelite 543–7
field ionization (FI) *see* ionization
Filicopsida 728
Filletino oil, Italy 568
fingerprint 483
  m/z 191 551–5
  m/z 239 586
First White Speckled Shale, Canada 902
fish 724, 731
Fish River Shale, Canada 960
Fish Scales Zone, Canada 900
fission tracks *see* apatite fission tracks
flat spot 705
fluid inclusions 580, 599, 650, 755, 763
Flavobacterium 652
flood basalt 735, 747, 748, 749, 829, 889, 891, 919, 920
Florina Basin, Greece 551
flowering plants *see* angiosperms
flowers 738, 739
fluorenes 702
fluvial deltaic oils 549
fluvial-lacustrine lithofacies 838, 844, 846
Foinaven Complex, UK 574
foraminifera (forams) 725, 731, 732, 921, 922, 957, 960
forecasting efficiency 475, 476
formation water 649
Fortescue Group, Australia 714, 755
Forties Field, North Sea 884
Fort Kent Thermal Project, Alberta 667
Fort Worth Basin, Texas 809
Frasnian–Famennian boundary 743, 748, 801
free-base porphyrins 603
free radical scavengers 713
frequency factor 966
freshwater 488, 489
fritschiella 725
Frontier Shale, USA 738, 901
Fruitland Formation, USA 900, 902–4
frustule 492
fucoxanthin *see* carotenoid
Fulin Basin, China 522
fullerenes 745, 746, 749, 750, 764
fumarate 654–5
  addition 654–5
fungal hyphae 716
fungus 595, 645
fusulinids

Gabon Basin, Africa 835, 841, 847, 849
Gadvan Formation, Khuzestan 866
Galembo Member, Colombia 909
Galena Group, USA 783, 788
Gama well, Gulf of Suez 915
gametophyte 726
gamma-ray response 905
gamma-ray zone, Alaska (GRZ) 826, 885, 895–8
gammacerane 485, 554, 578, 591, 665, 697, 780, 801, 814, 818, 820, 885, 921, 923
gammacerane index 501, 575–7
gammacer-2-ene 575, 591
gammacer-3β-ol *see* tetrahymanol
Garau Formation, Lurestan 860, 865
Garden Banks well, Gulf of Mexico 878, 879
Garoupa Field, Brazil 843, 847
gas chromatography/atomic emission detection 670
gas chromatography/mass spectrometry *see* GCMS
gas chromatography/mass spectrometry/mass spectrometry *see* GCMS/MS
gas hydrate 657, 749, 919, 960
gas/liquid chromatography *see* gas chromatography
gas–oil ratio (GOR) 976
gas petroleum systems 756–7
gas–source rock correlation 752
gastropod 737
Gautier Formation, Venezuela 907
GC *see* gas chromatography

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

GC/FID *see* gas chromatography
GC × GC *see* gas chromatography
GCMS 476
GCMS/MS 476, 612, 613, 617, 626, 629, 630
GDGT *see* gylcerol dialkyl glycerol tetraethers
Gebel Zeit, Gulf of Suez 915
Geiseltal lignites, Germany 547
gene 717
generation-accumulation efficiency (GAE) 789, 809
generation (conversion) parameters 608–9
generative basins 751
geochemical fossil *see* biomarker
geochemical log 840, 844, 846, 849, 853, 855, 872, 936, 950
geochromatography 629, 964–6
geographic extent 754
geoporphyrin *see* porphyrin
geopressure 649–50
Georgina Basin, Australia 770, 774, 777
geranylgeranyl diphosphate 539, 541
geranylgeranyl pyrophosphate (GGPP) 550
Ghaba Salt Basin, Oman 526, 771, 772
Ghadames Basin, North Africa 790, 791, 798
Ghakum Formation, Iran 861
Ghareb Formation, Jordan 917–18
Gharif Formation, Oman 772
Ghawar Field, Saudi Arabia 645
gibbane 550
gibberellins 550
Gigante Field, Colombia 913
gigantopterids 572, 739
gilsonite 478, 479, 522, 523, 577, 604
gilsonite dikes 479
ginkophyte (ginkos) 730, 733
Gippsland Basin, Australia 540, 547, 551, 580, 613, 670, 672, 753, 916–17, 918
GK well, South Sumatra Basin 626, 627
glaciation 716, 732, 740, 744, 747–8, 768, 777
glaciers 720, 731
Glamo oil, Yugoslavia 568
Glenwood Formation, USA 765, 783, 788
global oceanic anoxic event *see* oceanic anoxic event
global plume 770
global sea level 744, 890
global temperature 744
global warming 748, 749, 889–93, 919
Gloeocapso 779
Gloeocapsomorpha 492, 599, 721, 779–83, 784, 785, 788
glossopterid 730
Glossopteris 733
glycerol dialkyl glycerol tetraethers (GDGTs) 503, 504
Glyptostrobus 546, 547
gnetales 739
Golden Trend Field, USA 806, 808
Goldwyrn Formation, Canning Basin 765
Gomo Member, Candeias Formation, Brazil 840, 841, 842
Gondwana 715, 719, 720, 721, 722, 723, 730, 731, 732, 733, 734, 735, 737, 739, 747, 811, 872
GOR *see* gas–oil ratio
Gothic Shale, Paradox Basin 810
Gotland, Sweden 777, 778
Gotlandien Shale *see* Tanezzuft Shale
Gotnia Basin, Middle East 855, 859, 863, 864, 865
gracilicutes *see* Gram-negative bacteria
grahamite 478
grain size 646
Graminaeae (grasses) 577, 741
Gram-negative bacteria 652
Gram-positive bacteria 652
Grand Canyon, Arizona 576
Grande Coupure (Big Break) 740
Graneros Shale, USA 900, 901, 902
graphite 608, 712
graptolites 721, 748
graptolitic shale 722, 790–1
grasses *see* graminaeae
Great Basin, Nevada 807
Greater Green River Basin, USA 921
Greater Pangea 732, 733, 735, 825
Greenhorn Cyclothem 900–1, 902
Greenhorn Shale, USA 738, 901, 902, 903
greenhouse 723, 749, 889, 891
greenhouse gases 714
Greenland–Scotland Ridge 740
Green River(!) 926
Green River Formation, USA 479, 502, 522, 523, 555, 575, 741, 921–5, 927, 946, 978, 979
greenschist facies (memorphism) 764
Green sulfur bacteria *see Chlorobiaceae*
Green well, Iowa 783
greigite 980
Grenzbitumenzone Formation, Southern Alps 824
Grypania 714
GRZ *see* gamma-ray zone
Guadalupian Series, Permian Basin 813
Guaymas Basin, Gulf of California 964
Guelph-Salina Interval, Michigan Basin 794
Gulf of Mexico 875–83, 899
Gulf of Suez, Egypt 915, 916
Gulf Stream 742
Gulf of Thailand 939–41
Gullfaks Field, North Sea 674
Gumai Formation, South Sumatra Basin 627
Gunflint Banded Iron Formation, Ontario, Canada 714
Gurpi Formation, Khuzestan 867
Guttenberg Member, Decorah Formation 765, 780, 781, 783
gymnosperm *see* conifers
Gymnospermopsida 578

Hadean Eon 709–11
hafnium 711
halite 503, 771
halobacteria 483, 499
halophile 647
halophilic archaea 503
halophilic bacteria *see* halobacteria
Halsea 514
Haltenbanken Area, Norway 827–8
Hamelin Pool, Australia 713
Hamersley Group, Australia 714
Hamilton Dome, Wyoming 532, 566, 814, 815
Hangenberg Event 797
Hanifa Formation, Saudi Arabia 860, 864, 865
haploid *see* gametophyte
Hartford Basin, Connecticut 616, 824
Hartland Shale, USA 901, 902
Hassi Messaoud Field, Algeria 792
Haupdolomit Formation, Northern Alps 824
Haushi Sandstone, Oman 771
Hawtah Well, Saudi Arabia 631
HBI *see* highly branched isoprenoids
H/C *see* atomic H/C
HCA *see* hierarchical cluster analysis
head-to-head isoprenoids 484, 498
Heathfield Well, Australia 906
Heather Formation, North Sea 828, 885
Heath Formation, USA 809
Heath Formation, Peru 742, 930, 932, 933
Heath-Tyler(!) 809
heating rate 969, 970, 971, 975
heat of formation 566
Hebron Field, Newfoundland 686
helium 745, 746, 749, 750
Helmsdale Fault, Scotland 574

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

hematite 714
hepatophyta (liverworts) 726
herbaceous 733, 739, 814, 828, 845
Hercynides Mountains, Europe 731
Hermosa Group, USA 809–10
heterosporous 728
heterotroph 711
hexacyclic polyprenoids 591
hexadecane 656
hexahydrobenzohopanes (hexacyclic hopanoids) 485, 569, 570
hexanoyloxyfucoxanthin *see* carotenoid
HI *see* hydrogen index
Hibernia Field, Newfoundland 887, 888, 889
hierarchical cluster analysis (HCA) 480
higher-plant fingerprint (HPF) 597
higher-plant input 594, 596, 599
higher-plant input (HPI) parameter 596–7
higher-plant parameter (HPP) 596–7
higher plants 524, 596, 725, 728
highly branched isoprenoids (HBI) 484, 512–16
  C_{25} HBI 513, 514, 515, 516, 917, 945, 958
highly branched isoprenoid thiophenes (HBIT) 515
highly radioactive zone (HRZ) *see* gamma-ray zone
high-performance liquid chromatography (HPLC) 605
highstand systems tract (HST) 481, 482, 484, 862, 909, 910, 953, 955, 956
high-temperature gas chromatography/electron-impact mass spectrometry (HTGC/EIMS) 603
high-temperature gas chromatography/field ionization mass spectrometry (HTGC/FIMS) 603
Himalayan Mountains 742, 743
Himalayan orogenic collision 868
Hoggar Mountains, Algeria 834
Hollin Formation, Colombia 908
hominid 742
Homo 743
homodrimane 542, 670
homohopanes *see* hopanes
homohopanoic acids 568
homolog 476
homologous series *see* homolog
homolytic scission 632
C(14*a*)-homo-26-Nor-17*a*-hopanes 692
homopregnane 485, 674, 676
Hongyanchi Formation, China 818, 820
hopane isomerization [22S/(22S + 22R)] 613–14, 626, 627, 635, 683, 684, 966, 967, 968, 970
hopanes 552, 566, 567, 570, 572, 573, 581, 613, 662, 692, 797, 927
  biodegradation 665, 681, 682, 683
  C_{27} hopane II *see* Ts
  C_{29}/C_{30} 571
  C_{30} hopane 621, 663, 666
  C_{31}/C_{30} hopane 559, 569
  C_{35} hopanes 485, 814
  C_{35} homohopane index (C_{35} hopane index) 500, 573, 574, 684, 781, 952
  $C_{35}S/C_{34}S$ 571
  distributions 566, 568, 615, 687, 691
  17α,21α(H)-hopanes ($\alpha\alpha$-hopanes) 552, 553
  17α,21β(H)-hopanes ($\alpha\alpha$-hopanes) 555, 614
  17β,21α(H)-hopanes ($\beta\alpha$-hopanes) *see* moretanes
  17β,21β(H)-hopanes ($\beta\beta$-hopanes) 614, 688
  22S and 22R 565, 613
  stability 614
C-10 hopanoic (hopanoid) acids 678, 689
hopanoic (hopanoid) acids 688, 702, 703
hop-17(21)-enes 614
hopenes 830
Δ2-hopenepolyol 571
Horneiophyton 727
Horn Valley Siltstone, Australia 779, 783
hornworts *see* Anthocerophyta
horses 741
horsetail *see Equisetum*
hot shale 790, 791
HPLC *see* high-performance liquid chromatography
Huab Formation, South Africa 812
Hue Shale, Alaska 825, 826, 896–8
Hue-Thompson(!) 896
Humble, Texas 688
huminite 953
hump *see* unresolved complex mixture
Huqf Formation, Oman 530, 771–2, 773
2-hydroarchaeol 511
hydrocarbon activation 654
hydrocarbon machine 751
hydrogen exchange 630
hydrogen index (HI) 567
hydrogen index vs. oxygen index *see* van Krevelen diagram, modified
hydrogen iodide (HI) 504, 506
hydrogen peroxide 713
hydrogen sulfide (H_2S) 604, 646, 649, 815
hydrolysis
  alkaline 539
hydrothermal silicification 755
hydrothermal vent 711
hydrous pyrolysis 615, 630, 966, 969, 970, 971, 975, 976, 977, 978, 979
hydroxyarcheols 510
hydroxyl radicals 713
hydroxytriterpenoids 547
hypercarnia 748
hypersaline 489, 499, 501, 503, 512, 575, 576, 615, 628, 629, 808, 810, 812, 814, 817, 820, 845, 850, 917, 923
  source rock 616, 641, 923
hyperthermophile 648
hyperthermophilic archaea 649
hypothetical(.) 752
hystrichospheres *see* dinoflagellate cysts

Iabe-Landana Source Rock, Angola 850, 853, 854, 936
Iapetus Ocean 719, 721, 722, 774
Ice Age 720, 748
Icebox Member, Williston Basin 765
ichnofossil *see* trace fossil
Icypachi Member, Peru 825
ichthyosaurs 737, 740
Ichtyol Shales, Swiss Alps 824
Illinois Basin, USA 788–9, 798
Illizi Basin, North Africa 798
illite 533
immature 608
Imperial Shale, Canada 725
independent petroliferous systems 751
India 737, 740
influx of sediment, water 837–8
inner ramp 861
Inoceramus Shale, South America 738
insects 724, 731, 733, 737
Interior Basin, Gabon 898
Internal Zone, Betic Cordillera, Spain 957
intershelf basins 861
Ionian Basin, Greece 830, 831
ionization
  chemical ionization (CI) 587, 603
  field ionization (FI) 587
ionizing chamber *see* source
iosene *see* phyllocladane
Iquiri Formation, Bolivia 801
Irati Formation, Brazil 812, 819–20
Iremeken Formation, eastern Siberia 768, 769
iridium 745, 746, 750
Irkutsk region, eastern Sibera 767
iron–nickel sulfides 711
iron-reducing bacteria 654, 655
isoalkane 493, 650
isoarborinol 577, 592, 593

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

isoarborinone 575
isocadalene (1,6-3-isopropylnaphthalene) 623, 624
isocadalene/(isocadalene + cadalene) 623–4, 626, 627
isochamaecydin 546
isodihydro-*ar*-curcumene 670–1
isoheptane ratio *see* K_1
isohexyl alkylaromatics 599–600, 601, 602
isomerization 582, 612
isoparaffin *see* isoalkane
isopentadecane (2-methylpentadecane) 497
isopimarane 543, 544, 545, 547
isoprenoid/*n*-alkane ratio 641
isoprenoids 764, 816
  acyclic 506–7, 517, 665
  acyclic ($>C_{20}$) 498–9
  C_{13}–C_{20} regular 502
  C_{21+} regular 503
  C_{25} regular 508
3-isopropylalkanes 496
24-isopropylcholestanes 490, 491, 530, 749, 771
24-isopropylcholestanes/*n*-propylcholestanes 787
6-isopropyl-1-isohexyl-2-methylnaphthalene (ip-iHMN) 596, 597
isorenieratane 485, 523, 591, 593–4
  ^{13}C-rich 593, 903
isorenieratene 485, 593, 595, 901, 903
Isthmus of Panama 742
Isua, Greenland 712
Izhara Formation, Qatar 860, 863

Jamison Formation 766
Japan Trench, Pacific Ocean 519
Jatobá Basin, South America 834
Jeanne d-Arc Basin, Canada 617, 685–6, 887, 888
Jenam Formation, Bangladesh 920
Jet Rock, Yorkshire, UK 830, 892
Jianghan Basin, China 531, 946
Jilh Formation, Abu Dhabi 861
Jingjingzigou (Jingingzigou, Zingjingzigou) Formation, China 817, 818, 819, 820, 946
Jiquia Stage 835
Jubaila Formation, Saudi Arabia 860, 864
Junggar (Zhungeer) Basin, China 522, 674, 695, 696, 732, 817, 819, 820, 870, 871, 946
Jura-Bresse Basin, Europe 735
Jurassic-Cretaceous highstand 774
Jurassic (Early) paleo-plate reconstruction 734
Jurassic (Late) paleo-plate reconstruction 735
Jurassic Period 735–6
Jurassic source rocks 823
Jusepin Field, Maturin Basin, Venezuela 696

K_1 (Mango parameter) 667
Kaapvaal Craton, Australia 712, 763–4
Kaimiro Formation, New Zealand 919
Kalavryta Basin, Greece
Kalol Formation, India 920
Kalubik well, Alaska 883
Kamovsk Arch, Eastern Siberia 767
Kant-LaPlace hypothesis *see* accretion disk hypothesis
Kap Stewart Formation, Greenland 828
Kapuni coals, New Zealand 918–19
Karababa Formation, Turkey 915
Karabogaz Formation, Turkey 915
Karalian shungite, Russia 764
Karamay Black Hill Field, China 819
Karamay Field, China 817, 818
Karoo Basin, South Africa 812
Karoo-Ferra basalts 748, 919
Karoo Formation, South Africa and Madagascar 763, 830
Karoo Province, Gondwana 829
Karun Field, Iran 929
Kashaf Formation 861
Katia well, Italy 568, 976, 977
Kattegat, Denmark/Sweden 509
kaurane 490, 543–51, 820
kaurene 550
Kaveakak Field, Alaska 883
Kavearak Point Field, Alaska 883
Kavearak Well, Milne Field, Alaska 557
Kawaruppu, Hokkaido, Japan 750
Kazakhstania 723
Kazhdumi Formation, Khuzestan 738, 859, 860, 867, 868
Keel Field, Michigan Basin 786
Keg River Formation, Canada 796–7, 798
Kelamayi Field, China 522, 695, 696
kerogen assemblage A and B *see* assemblage A or B
kerogen 499, 500, 502, 539, 608, 713, 749, 764, 777, 819, 972
  see also type I, II, IIS, II/III, III, IV
Khazdumi Formation *see* Kazhdumi Formation
Khmer Trough, Gulf of Thailand 941
Khuzestan, Iran 855, 859, 863, 928
Khuzestan Basin *see* Dezful Embayment
Kimberlella 718
Kimmeridge Bay Field, UK 875
Kimmeridge Clay (Kimmeridge) Formation, North Sea 496, 525, 527, 583, 619, 736, 827, 884–8, 889
  Bitumen extracts 526, 528, 562, 584, 588, 594, 611, 619
  Oil 611
Kimmeridgian transgressive shales 884–9
kinetic fractionation 977
kinetic model for biomarker maturation 972
kinetic parameters 845, 966
Kingak-Blankenship Interval, Alaska 826, 883–4, 898
Kingak Formation, Alaska 557, 825, 826, 883, 885, 896, 897
Kiowa-Skull Creek cyclothem 900
Kisalföld Basin, Hungary 947
Kishenehn Formation, North America 579, 930, 934
Kissenda Formation, Gabon 844, 848, 898–9
K-nearest neighbor (KNN) 482, 955
KNN *see* K-nearest neighbor
known(!) 752
Knox Dolomite, USA 788
KOH *see* potassium hydroxide
Korea Bay Basin, Yellow Sea 635
Kössen Marl Formation, Hungary 947
Koviktinskoye Field, Eastern Siberia 767
Krebs tricarboxylic acid cycle 606
Kreyenhagen Formation, California water 701
Krishna-Goodavari Basin, India 741
Kugmallit Sequence, Canada 960
kukersite 765, 779, 783–4
Kuma Formation, South Caspian 932
Kuna-Lisburne Interval, Alaska 812
Kuparuk Field, Alaska 826, 883
Kupferschiefer Formation, Germany 501, 566, 577, 593, 605, 733, 811, 814–17
Kurra Chine Formation, Iran 861
Kutei Basin, Kalimantan 742, 950, 953
Kwagunt Formation, Utah 771
Kwanza Basin, Angola 835, 841, 854
Kyalla Member, Australia 766

LaClede Bed (Lower Laney Member), Wyoming 923, 924
labdane 543, 544, 550, 600
labyrinthodont *see* amphibian
lacustrine 487, 521, 560, 577, 837–45
  oils 561, 578, 856, 904
Laffan Formation, Southern Gulf Basin 860, 867

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Lagoa Feia Formation, Brazil 842–3, 846, 847, 853
Lahat (Lemat) Formation, Sumatra 939
Lake Gosiute, USA 921
Lake Nyos, Cameroon 748
lakes 487
Lake Songliao, China 528
Lake Thetis, Australia 720
Lake Turkana, Kenya 853
Lake Uinta, USA 921
Lake Valencia, Venezuela 577
Lake Vostok, Antarctica 716
Lakhanda Group, Siberia 716
Lalla Rookh Formation, Australia 755
La Luna Formation, Venezuela 529, 549, 643, 738, 907–11, 942
La Luna-Misoa(!) 909–11
lamalginite 864
Lameignére Quarry, Orthez, France 590
laminae 713
lamination 488
Landana Formation *see* Iabe-Landana source rock
land plants 578, 721, 723, 724, 725–30
lanosterol 14α-demethylase 714
Laramide Uplift 921
Late Ashgill event *see* Ashgill mass extinction
Late Paleocene thermal maximum 919
Late Proterozoic (Neoproterozoic) petroleum systems 768–72
Late Proterozoic paleo-plate reconstruction 715
latex 547
laticifers 547
Latrobe Formation, Australia 738, 916–17, 918
Laurasia 735
Laurentia 715, 719, 720, 721, 722, 723, 725, 730
Laurineae 739
Laurussia 723, 730
Lava Basin, Greece 551
leaching *see* solubilization
lead ore 825
leaves *see* megaphylla
Leduc Reef, Canada 801
legumes 726
Leigh Creek Coalfield, Australia 578
Lemmaphyllum 579
lemurs 741
Leonard Shale, USA 733, 813
Leonard-Wolfcamp units, USA 812, 813
Lepidodendron 579, 729
lexane 523
Leyte oil, Philippines 622
$LiAlH_4$ *see* lithium aluminum hydride
Liaohoe Basin, China 634
Liaoning Province, China 739
Lias Shale, Europe 968
Libros Basin, Spain 945
lichens 726
light hydrocarbons C_2–C_6 664
light oils 478
lignin 725, 727
lignite 547, 613, 926
limestone 495
limnic (lacustrine) coal 551
limonene 582
limonite 479
Lincoln Shale, USA 901, 902
Lindsey Formation, Canada 785
Linyi Basin, China 616, 968
lipids 725
Locker Shale, Australia 821–2, 875
liquid chromatography/mass spectrometry (LCMS) 603
lithium aluminum hydride ($LiAlH_4$) 504, 506
lithology 646
Little Plains Basin, Hungary 947
littoral facies 924
liverwort *see* non-vascular plant
Llanos Basin, South America 907
loadings plot 482
Lodgepole Formation, USA 803, 804
Logbaba Gas Field, Cameroon 851
Loma Chimico Shale, Costa Rica 516, 917, 919
Loma Montosa Formation, Argentina 894
Lombardy Basin, Italy 831
Lorca Basin, Spain 957–8
Los Angeles Basin, California 563
Los Molles Formation, Argentina 893
Los Monos Shale, South America 796
Louanne Salt, Gulf of Mexico 735, 877
Loufika outcrop, Congo 675, 691
Louise well, Mahakam Delta 950, 953
Lower Congo Basin, West Africa 841, 850
Lower Kittanning coal, USA 970
Lower Magdalena Basin, Colombia 907
lowstand systems tract 481, 482, 574, 749, 862, 909, 953, 955, 956
Lubna well, Czech Republic 538, 541, 566, 586, 636, 637
Lucaogou Formation, China 817, 818, 820
Lucina Formation, Gabon 898
Luman Tongue, Washakie Basin 921, 923, 924
lupane 574, 575, 580, 581, 582, 697, 960
lupanoid ketones 697
lup-20(29)-ene 580
lupeol 580
lurestan, Iran 855, 859, 863, 865, 928
lutein *see* carotenoid
lycopadiene 517, 520
Lycopodium (club moss) 579
lycopa-14(E), 18(E)-diene *see* lycopadiene
lycopane 498, 507, 518–20, 524
lycopene 519, 520, 524
lycophyte (club mosses) *see* lycopsids
lycopsids (lycopsida) 724, 727, 728, 729, 731, 733, 811

Maceió Formation, Brazil 846
Machareti Formation, South America 796
Mackenzie Delta, Canada 580, 742
Mackenzie Mountains, Canada 716
Mackeral Field, Australia 918
Macrocyclic alkanes 485, 520–1
Macroseeps 704
Madbi Formation, Yemen 863
Madison Group, USA 805
Madre de Dios Basin, Bolivia 801, 811, 813
Madrin Formation, east Siberia 768
Mae Sot Basin, Thailand 959
Magwa Field, Kuwait 863, 864
magnetite 980, 981
magnoliidae 739
Mahakam Delta, Borneo 481, 482, 613, 942, 953, 955
Mahogany Member *see* Green River Formation
Majaer Depression, China 785
Makassar Slope, Kalimantan 481, 482, 953
malabaricatrienes 556
Malay-Tho Chu Basin, Vietnam 938, 939
maleimides 485, 605–6
Malembo Formation, West Africa 853, 935, 936
Malm carbonates, Bavaria 501, 518
Malongo West Field, Congo Basin 843
Malossa Field, Italy 824
MA(I)/MA(I + II) *see* monoaromatic steroids
mammals 736, 737, 741
Mancos Shale, USA 901
Mandal Formation, North Sea 885
Mandan, North Dakota 668
Mangahewa Formation, New Zealand 919
manganese 655
Manicouagan impact crater, Quebec 746, 747
Maniguin Island, Visayan Sea, Philippines 518, 519

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Manilla Embayment, Gulf of Mexico 877
Mannville-Grosmont reservoirs, Alberta, Canada 477
Maoming Shale, China 516, 518, 519, 926
Maqna Formation, Red Sea Basin 946
Maquoketa Shale, USA 779, 788–9
Maracaibo Basin, Venezuela 907, 911
Marañon Basin, South America 811, 812, 813, 907, 908
Marathon Orogeny 809
Maracaibo Basin, Venezuela 489
Marañon Basin, Peru 667, 825
Mara well, Canada 685, 686
Marco Polo 934
Mardin Group, Turkey 915
marine coal 551
marine oils 561, 856
marine organic matter 524, 527
marine reptiles 736, 740, 744, 745
Marmoul Field, Oman 771, 773
Marraat oil, west Greenland 581, 582
Marrat Formation, Saudi Arabia 860, 864
Mars 716, 980
Marrat Shale, Oman 736
marsupial *see* mammal
Martian bacteria 602, 980
Marun Field, United Arab Emirates 867, 868
mass extinction 559, 721, 724, 733, 737, 743–9, 797, 801, 919
MA-steroid *see* monoaromatic steroids
mature 608
Maturin Basin, Venezuela 696, 907, 942
Mattoon Formation, Illinois 551
Maui Field, New Zealand 544, 547, 919
Mauritanide Mountains, North America 731
maximum flooding surface (MFS) 790, 831, 894, 908, 909, 956
Maykop Series, South Caspian 931–5
Mazalij well, Saudi Arabia 631
McArthur Basin, Australia 719, 765, 767
McArthur Group, Australia 765–6, 767
McArthur River well, Cook Inlet 834
McKittrick Field, California 616
McMinn Formation, Australia 765, 766, 767
Meade Peak Member, USA 733, 814
Meganeura 731
megaphylla (true leaves) 728
Melania Formation, Gabon 844, 848, 898–9
Melke Formation, Norway 828
meiosis 726
Mereenie Field, Australia 783
Meren well, Niger Delta 951
Meride Limestones, Italy 822
mesohaline 501, 824
Mesoproterozic petroleum systems *see* Middle Proterozoic petroleum systems
Mesostigma 725
Mesozoic source rocks 820–918
Mesozoic source rocks, Arabian Platform 823, 855–68
  jurassic 862–4
  Lower Cretaceous 865–7
  Middle Cretaceous 867
  Upper Cretaceous 867–8
Mesozoic source rocks, Gulf of Mexico 876
Mesozoic source rocks, South Atlantic margins 834–48, 858, 908
  lacustrine 837–45, 849
  marine carbonates 847
  marine shales 852
  transitional carbonates 845–7
Messel Shale, Germany 494, 496, 497, 504, 518, 577, 589, 590, 591, 593, 603, 605, 635, 926–8
metalloporphyrin *see* porphyrin
metastable reaction monitoring *see* MRM/GCMS
metaxylene *see* xylene
metazoa 713, 718, 720
methane 714, 763
  biodegradation 656–7, 664
  hydrate 829, 892, 919, 960–1
  methane monooxygenase 656
methane-oxidizing bacteria 572
methanogen 498, 503, 509, 512, 656
methanogenic archaea 507, 508, 509
methanogenic bacteria *see* methanogen
methanogenic biomass 504–5
Methanosarcina 508
Methanosarcinales 657
methanotroph 656, 688, 960
methanotrophic archaea 509
methanotrophic bacteria 571
methyladamantane/adamantane 700
methyladamantane/nC$_{11}$ 700
methylalkanes 764
methylbicadinanes 549, 621, 622
methylbiphenyls 672
methylcyclopentadecane 521
methyldiamantanes 700
methyldibenzothiophenes 672
methyldiphenylmethanes 672
2-methyldocosane 484
methylfluorenes 702, 973
2α-methylhopane index 571, 781
methylhopanes 569–71, 781
2-methylhopanes 485, 494, 571
2α-methylhopanes 569, 714
3-methylhopanes 569, 571
3β-methylhopanes 485, 571
methylnaphthalenes 643, 670
methylnaphthalene isomer ratios (MNR) 643–4
Methylococcus 531, 571
methylphenanthrene index (MPI-1) 642–3
  MPI-1 vs. R_o 642
methylphenanthrene ratio (PP-1) 974
methylphenanthrenes 582, 596, 642, 643, 672, 973, 974
methylsteranes 534, 674
2α-methylsteranes 763
4-methylsteranes 485, 487, 528, 530–2, 533, 561
4-methylsterols 531, 927
methylthioacetate 711
4α-methyltriaromatic steroid 591
methyltrimethyltridecylchroman (MTTC) 500–1
methylxanthones 673
Metula 695
Mexia-Talco Fault Zone, Texas 877
Miandoum Field, Chad 542
Michigan Basin, USA 794, 803, 975
microbial gas 509
microbial mat 494
  see also cyanobacterial mat
microfossils 712, 713, 714, 764, 765
microphylla (spines) 727
microseeps 704
microsphere 711
microtektites 746
microtubules 726
Mid-Atlantic Ridge 647
mid-chain monomethylalkanes (X-compounds) 484, 493, 767, 771, 772
Mid-Cretaceous anoxic event 749
Middle Green River Formation, Uinta Basin 923
Middle Magdalena Basin, Colombia 549, 907, 908, 909
Middle Proterozoic (Mesoproterozoic) petroleum systems 764–8
Midland Basin, USA 812, 813
mid-ramp 861
Midway Formation, Gulf of Mexico 882
migrated oil 477
Migration 616, 629
  distance 966
Mikkelsen Bay State well, Alaska 898
Milankovitch 824

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Miller–Urey experiment 711
Milligans Formation, Bonaparte Gulf Basin 809
Milne Point Field, Alaska 883
Minagish Formation, Gotnia Basin 860, 866
Minas Field, Sumatra 517, 518, 519, 520, 936, 937
Minnelusa Shale, USA 811
Miocene paleo-plate reconstruction 741
Mississippian-Pennsylvanian Period *see* carboniferous period
Mississippi Canyon Well, Gulf of Mexico 881
mitosis 726
mixed oils 561, 685
MNR *see* methylnaphthalene ratio
Moho *see* Mohorovicic discontinuity
M-2 oil, Danish North Sea 553
Mokattam Shale *see* Tanezzuft Shale
Molasse Basin, Europe 699
molecular clock 717
molecular dynamics (MD) 966
molecular fossil *see* biological marker
molecular mechanics 556, 557, 565, 617, 629, 684, 695
molybdate 654
monazite 755
monoaromatic hopanoid parameter 634–5
monoaromatic polyprenoids 589–91
monoaromatic steroids (MA-steroids) 583, 584, 585, 631, 632
  MA(I)/MA(I + II) 632–3
  [TA/(MA + TA)] *see* steroid aromatization
monocot *see* angiosperm
monoethylalkane 900
monomethylalkane 493, 494–6, 767, 900
monooxygenases 650, 651, 652, 653
monotreme *see* mammal
Monte Prena, Italy 976, 977
Monterey Formation, California 505, 519, 540, 562, 568, 609, 615, 618, 679, 742, 944, 945
  bacterial mats 562
  biogenic silica 944
  lithofacies 563
  oils 475, 559, 562, 568, 603, 619, 628, 641, 646, 680, 706, 707, 708, 946, 977, 978
  Phosphatic Member 971, 978, 979
  Siliceous Member 971, 978
  water 701
montmorillonite 533, 535, 965
Montney Formation, Canada 825
Moravia, Czech Republic 538, 587
Moraxella 705
Moray Firth, UK 477, 523, 884, 885
Moreno Formation, California 509
moretanes 552, 614, 616, 621
  22S/(22S + 22R) 614
  moretanes/hopanes 614–15
mosasaurs 740
Moschopotamos Basin, Greece 551
Mosquito Creek Formation, Australia 755
Moura coals, Australia 702–4
Mount Cap Formation, Canada 780
Mount Holland Shale, UK 738
Mowry Shale, USA 738, 900, 901
MPI *see* methylphenanthrene index
MRM/GCMS 476, 528, 530, 612
Msimbati, Tanzania 688
MTTC *see* methyltrimethyltridecylchroman
mud volcano 497, 933
Mukluk well, Alaska 475
Mulhouse Basin, Alsace, France 604, 605
Multidimensional chromatography *see* gas chromatography
multiple ion detection (MID) *see* selected ion monitoring
multivariate statistics 479
Murchison meteorite 602, 981
murein 720
Muribeca Formation, Brazil 846
Murta Formation, Australia 874, 895
Murzuq Basin, Libya 791
Muskeg Member, Keg River Formation, Canada 796
Myanmar oils 622
Mycobacterium 652
m/z 191 *see* terpanes
m/z 217 *see* steranes

Nahr Umr Formation, Arabia 738
Nahrum Shale, Arabia 738
Najmah Formation, Kuwait 860, 863, 864, 866
Nam Con Son 938, 939
naphthalenes 651, 652, 672, 817
naphthene *see* cycloalkane
naphthenic acids 701
naphthenoaromatic acids 701
Naples Beach, California 562
Napo Formation, South America 738, 907, 911, 912
nappe 742
Narragansett Bay, Rhode Island
Narrows Gaben, Queensland, Australia 928
Narryer Gneiss, Australia 711
$NaSCH_3$ *see* sodium methane thiolate
Natih Formation, Oman 860, 861, 862, 867, 870
National Petroleum Reserve in Alaska (NPRA) 883, 896
Natuna Sea rift basins 939–41
Navay Formation, South America 907, 908
nC_{29} alkane 750
nearest neighbor clustering 480
negative correlation 477
Neiber Dome, Wyoming 585
Nemcicky well, Czech Republic 538
Nematothallus 726
Nemesis 747
Neogene Period 741–2
18α-neohopane
  C_{27} *see* Ts
  C_{29} *see* C_{29}Ts
  C_{30} *see* C_{30}Ts
Neoproterozoic Eon 715–19, 771
Neoproterozoic petroleum sytems *see* Late Proterozoic petroleum systems
neoxanthin *see* carotenoid
Nesson Anticline, Williston Basin 806
Neuquén Basin, Argentina 893, 894–5, 896
neurotoxin 919
New Idria, California 479
New Albany-Chesterian(!) 798
New Albany Shale, USA 609, 636, 725, 798
Newark Basin, North America 968
Newark Supergroup, North America 824
Newporte impact crater, Williston Basin 789
Niagaran pinnacle-reefs, Michigan Basin 794
nickel 663
nickel ion 604
nickel sulfide 604
Niger Delta, Nigeria 573, 618, 742, 837, 851, 875, 949, 951, 952
Niland Tongue, Wasatch Formation 921, 924
Niobrara cyclothem, USA 901
Niobrara Formation, USA 901, 903
nitrate
  -reducing anaerobes 653
  -reducing bacteria 654
nitrogen 641, 663
  fixation 726
Niuzhuang South Slope, China 965
Nkalagu Formation, Gabon 738
N'Komi Rift, Gabon 898
Nobel family 935
Nobel Prize 935

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Nocardia 652, 653
Nocardioides 681
nomenclature (structural)
  terpanes 695
Nonesuch Shale, Michigan 610, 766
non-marine oil 528
non-vascular land plant *see* Bryophyta
norcholestanes 538, 540
  biodegradation 674
  21/(21 + 27) norcholestane ratio 631
  C24/(C24 + C27)
  21-norcholestanes 539
  24-norcholestanes 490, 492, 537–8, 859
  27-norcholestanes 560
Nordegg Formation, Canada 477, 832–3
24-nordiacholestane ratio [24/(24 + 27)] 541, 787
24-nordiacholestanes 490, 491, 492, 537–8
27-nordiacholestanes 560
Nördlinger Ries crater, Germany 539, 830
25-norhomohopane 20S 574, 675, 697
norhopanes
  α,β-norhopane 555, 662
  β,α-norhopane 689
  norhopane (C_{29} norhopane) 485, 675, 800
  15-norhopane ratio 684–5
  25-norhopanes (10-desmethylhopanes) 674, 675–85, 692, 705
  25, 28-norhopanes 692
  28-norhopanes 689, 692
  30-norhopane/hopane 569
  30-norhopanes 570, 571, 676, 680, 690
norisopimarane 543, 544
norkaurane 543
24-norlupane 580, 699
norlupanes 697
18α-30-norneohopane *see* C_{29}Ts
normal alkane (*n*-Alkane, *n*-Paraffin) 484, 493, 650, 668, 725, 750, 816
  biodegradation 651, 653, 654, 659, 664–5
  envelope 641, 659, 667, 669
Norphlet Formation, Gulf of Mexico 877
norphyllocladane 543
17-nortetracyclic diterpane 550
North Caspian Basin *see* Pricaspian Basin
North Equatorial Current 742
Northern Arabian Basin 855
Northern Permian Basin 814
North Falkland Basin, South America 834, 841
North Pacific Gyre 519
North Pole 712
North Sea
  oils 619
North Slope, Alaska 477, 827, 883, 897
Norwegian-Danish Basin 885
Northwest Peciko Well, Mahakam Delta 952, 953
25-nor-triene 593
novaculite 798, 806
NPRA *see* National Petroleum Reserve in Alaska
NSO compounds (resins) 477, 479, 658
Nubian Plate 861
Nubian Shelf 867
Nubian Shield 855, 861
nucleotide 711
nutrients 646
Nyalau Formation, Sarawak 942
nymphaeales (water lilies) 739

OAE *see* oceanic anoxic event
Ocal Section, Upper Magdalena Valley 910
oceanic anoxic event (OAE) 505, 719, 829, 889–93, 908, 919
Oceanic oil, California 616
octadecahydro-isorenieratene 594
odd-carbon preference *see* carbon preference index
odd-to-even predominance (OEP) 493, 635, 641–2, 783
OEP *see* odd-to-even predominance
Officer Basin, Australia 770, 780
Oficina Basin 942
Oil City Field, California 509
oil–oil correlation 477–9, 482, 976–9
oil sample *see* sample quality, selection, storage
Oil Shale Member, Dead Sea Graben 917
oil shales 945–6, 958
oil–source rock correlation 475–7, 752, 754, 976–9
oil spills
  biodegradation 662
oil-to-oil correlation *see* oil–oil correlation

oil-to-source rock correlation *see* oil–source rock correlation
oil window (oil-generative window) 608, 612
oil–water contact (OWC) 646
oil–water partitioning 966
okenone 593
Oklahoma Basin, USA 809
oldest free-flowing oil 710, 766
oldest giant oil field 710
oldest oil 710
Old Red continent *see* Laurussia
Old Red Sandstone, Scotland 794–6
18α/(18α + 18β)-oleananes 617–18
oleanane 485, 488, 489, 490, 491, 492, 529, 538, 547, 554, 573, 580, 600, 621, 665, 675, 684, 696, 697, 698, 699, 725, 730, 739, 947
oleanane/hopane *see* oleanane index
oleanane index [(Oleanane/(Oleanane + Hopane)] 527, 541, 549, 572–5, 617–18
18α-olean-12-ene 697, 699
olean-12-ene 697, 699
oleanenes 618
olefin 964
olefinic biomarkers 698
olnellids 747
Olpad Formation, India 920
Oman Salt Basin 771, 859
onoceranes 579–80, 930
Ontong-Java Plateau basalts, Pacific Ocean 919
Onverwacht Group, South Africa 712, 713
Ooraminna well, Australia 770
Oort Cloud 745, 747
optical activity 589
optical rotation 593
Oquirrh Basin, Nevada 807
Ora Field, Libya 914
Orca Basin, Gulf of Mexico 875
Orcadian Basin, Scotland 794, 983
Ordovician mass extinction 743
Ordovician paleo-plate reconstruction 721
Ordovician Period 721–2
Ordovician–Silurian boundary 746
Ordovician source rocks 776, 777–90, 983
organic acids 700–2
organic carbon *see* total organic carbon
organic matter
  depositional environment 487
  lacustrine 489, 560
  marine 489, 524, 527
  marine versus lacustrine 569
  marine versus terrigenous 488–90, 527
  mineralogy 487
  non-marine 524
  terrigenous 489, 524, 580
  type 487
organic productivity *see* productivity
organophosphorus insecticides 645
Orgueil meteorite *see* carbonaceous chondrite
Oriente Basin, South America 813, 907, 908, 911, 912
Orinoco Heavy Oil (Tar) Belt, Venezuela 645, 658, 942

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

ortho-substituted cyclization reacations 973
orthoxylene *see* xylene
Oseberg Field oil, Norwegian North Sea 692, 693
osmium isotope ratio 745
ostracodes 591
Ostracode Zone, Alberta 591
Otuk Formation 825, 883
Otway Basin, Australia 904–5, 906
Ouachita (Marathon) Mountains, USA 731, 779
Ouachita orogeny 809
Ouldburra Formation, Australia 780
outer ramp 861
overburden 754
overfilled lake 817, 818, 837, 838, 840, 844, 845, 846, 921
overmature *see* postmature
overpressure 479, 953
Overthrust Belt, Wyoming 616
Oxford Clay, UK 874–5
oxic 499, 567
oxic–anoxic interface 562
oxidation 816, 817
β-oxidation 650, 655
oxidative degradation 817
oxidation–reduction reaction *see* redox
oxygen
  free 713–15, 716, 747
oxygen isotopes 922
oxygen-minimum zone 790, 950
oxygen-producing cyanobacteria 569

Pabdeh Formation, Iran 741, 928–9
Pachuta Creek Field, Alabama 877
Pacific Ocean 735, 737
PAH *see* polycyclic aromatic hydrocarbons
PAL *see* Present atmospheric level
Palegreda Formation, Peru 930
Paleocene–Eocene boundary 740
paleoclimate 597
Paleogene Period 740–1
paleoheat flow 969
paleolatitude 524
Paleozoic Eon 771, 776
Palm Valley gas field, Australia 783
Palo Duro Basin, Texas 809
Panca well, Mahakam Delta 953, 955
Pando well, Bolivia 811
Pangea 731, 732, 734, 736, 740, 749, 824
Pannonian Basin, Europe 947–9
Pannotia 715, 719
Panthalassa 732
Panthalassic Ocean 715, 719, 721, 722, 730, 731, 732, 734, 735
Parachute Creek Member 923
Paradox Basin, USA 809–10
paraffin, normal *see* Alkane
paraffin dirt 687–9
n-paraffins *see* alkane
Paralic Basin, Europe 811
Paralic marine shale source rock 499, 500
Pará-Maranhão Basin, Brazil 847
Paraná basalts, South America 748
Paraná Basin, South America 812, 819–20
parasequence 925
paraxylene *see* xylene
Pardonet Formation, Canada 825
Parka 726
Pasco Field, Australia 875
Pasenhor 915
Patchawarra Formation, Australia 820
Pattani Basin, Gulf of Thailand 940
Pavlova 531
PCA *see* principal component analysis
Peace River heavy oil, Canada 645
Pearl River Mouth Basin, China 741
Pearsall Group, East Texas 880
peat 811
pebble–GRZ–Torok Interval, Alaska 826, 883, 895–898
pebble shale unit, Alaska 738, 826, 897
Pediastrum 853
Peedee Belemnite *see* PBD
Pelycosaurs 733
Pematang Brown Shale, Sumatra 518, 741, 935–39
Pennsylvanian coals, Southern Gas Basin 811
Pennsylvanian lacustrine rocks, East Greenland 810–811
Pennsylvanian-Permian Shales, North America 809
pentacyclic terpanes 662
pentacyclic triterpenoids 552
pentane 664
2,6,10,15,19-pentamethylicosane (PMI) 484, 498, 505, 507–10, 511, 512
pentakishomohopane 680
pepidoglycan *see* murein
perhydro-β-carotane *see* β-carotane
peridinin *see* carotenoid
Perintis well, Mahakam Delta 953, 956
periodic extinction 747
permeability 646
Permian coals 702
Permian Basin, USA 806, 812, 813
Permian extinction 743, 749
Permian paleo-place reconstruction 732
Permian Period 732–3
Permian source rocks 776, 812–20
Permian–Triassic boundary 746, 749, 764
Pertatatak Formation, Australia 770
Perth Basin, Australia 511, 548
Pertica 728
perylene 594–6
Petapahan Field, Sumatra 517
Peterborough Member, UK 874
petroleum 608
  system name
  system processes
  volumes (production and reserves) 755
petroleum systems 752, 756–7
  folio sheet 753, 754
  modeling *see* thermal modeling
  nomenclature 751–5
  non-US 762, 763
pH 533, 604, 617, 649
Phacoides oil, California 616
Phaeophyta 726
Phanerozoic Era 719–50
Phanerozoic petroleum systems 774–961
phenanthrene parameter (PP-1 and PP-$1_{modified}$) 643
phenanthrenes 643, 651, 670, 672, 817
phenolic hydrocarbons 650
phenylalkanes (linear alkylbenzenes) 598, 599, 600
Phoenix well, Alaska 826
Phosphatic Member *see* Monterey Formation
Phosphoria Formation, USA 628, 649, 686, 700, 733, 749, 814, 815, 972
photic zone
  anoxia 593, 901
photoinhibition 522
photosynthesis 713
  anoxygenic
  oxygenic 714
photosynthetic bacteria 576
photosystems I and II 713
phthalic acids 817
phyllocladane 485, 490, 543–51, 600, 820
phytane (Ph) 499, 507–8, 543, 591, 657, 666, 668, 981
phytane/nC_{18} 502, 641, 666, 674
phytanic acid 701
phytenic acid 499
phytol 499
phytyl side chain 499
Piceance Creek Basin, USA 479
picene 479
Piedra Redonda well, Peru 932
Pierre Shale, USA 902

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Pilbara Craton, Australia 530, 712, 714, 755–63
Pilenga Formation, Russia 941–2
Pilsk Formation *see* Borsk Formation
pimarane 543, 544, 545, 550, 600
pimaric acid 546
Pimenteiras Formation, South America 725
Pimienta Formation, Gulf of Mexico 878
Pimienta-Tamabra(!) 878
Pinaceae 551
Pinda Formation, Angola 853, 935
Pindinga Formation, Nigeria 579
Pinnacle reefs, Western Canada Basin 475
Pipeline Shale, USA 813
Piper oil, North Sea 525, 526, 527, 528, 562, 583, 584, 611, 619
piston (seabottom) cores 704, 705
placental *see* mammal
placoderm 724
planetesimals 709
plate tectonics 712, 764, 836
Plattville Formation, USA 781, 783
play 751
Pleistocene paleo-plate reconstruction 742
Plenus Marl, Europe 738
plesiosaurs 740
Pleurosigma 515
PMI *see* 2,6,10,15, 19-Pentamethylicosane
PMP *see* porphyrin maturity parameter
pod of active source rock 753
Podocarpaceae 547, 550, 551, 600
podocarpane 543, 600
Podocarpus 550
Point Clairette Formation, Gabon Basin 850
Point Pleasant Formation, North America 779, 785
Point Thomson, Alaska 896
Poker Chip Shale, Canada 830
polar compound 658
pollen 573, 725, 739
pollination 739
pollution 507
polycadalene 623
polycadinenes 547, 548, 619, 620
polycyclic aromatic hydrocarbons (PAH, PNA) 479, 595, 600–2, 670–2
  biodegradation 665
  Cretaceous-Tertiary 750
  Martian 980
  pyrogenic (pyrosynthetic) 602
polyester 645
polyisoprenols 556
polymethylsiloxane 627
polymethylsqualanes 484, 487, 518, 937
polynuclear aromatic hydrocarbons *see* polycyclic aromatic hydrocarbons
polyprenoid sulfides 561
polysporangia 726, 727
polysulfides 520
Ponta do Tubarão Member, Brazil 846
Popigai impact crater, Russia 747
Porifera 491, 530, 717
porosity 646
porphyrins 602–5, 664, 928
  biodegradation 665, 700
  distributions 604
  V/(V + Ni) 603–4
porphyrin maturity parameter (PMP) 628, 635–6
Port Gentil Ocean Field, Gabon 852
Port Sussex Formation, Falkland Islands 812
Posidonienschiefer, Europe 830
Posidonia Shale, Europe 830, 831
positive correlation 477
postmature 608
Post-Neocomian interval, Alaska 826
potassium hydroxide 701
potential source rock 608, 976
Potiguar Basin, South America 834, 837, 846, 847
Po Valley, Italy 822
Powder River Basin, Wyoming 811
PP-1 or PP-$1_{modified}$ *see* phenanthrene parameter
prasinophyte algae 790, 802
prasinoxanthin *see* carotenoid
Precambrian organic matter 493
Precambrian oils and source rocks 495, 763, 771
Precambrian-Cambrian 710, 717, 719
Pre-Caspian Basin *see* Pricaspian Basin
prediction of physical properties 705, 706
pregnane 485, 674, 676
prehnite-pumpellyite facies 755
pre-rift facies 837
present atmospheric level of oxygen (PAL) 713, 714
preservation 725, 754, 798
pressure 649–50
Pricaspian Basin, Kazakhstan 807
primary migration 965
Prince William Sound, Alaska 705
principal component 480
principal component analysis (PCA, eigenvector analysis) 478, 480–2, 983
Prinos Field, Greece 554
pristane (Pr) 499, 501, 513, 657, 666, 668, 972, 973, 981
pristane formation index (PFI) 972, 975
pristane/nC_{17} 641, 659, 666, 705, 706
pristane/phytane, pristane/(pristane + phytane) 484, 499–502, 562, 575, 781
pristene 499
prist-1-ene 500, 501, 972
productivity 798
Progreso Basin, South America 907, 930
progymnosperm 728
prokaryotes (bacteria) 712, 713, 766
propane 664
24-*n*-propylcholestanes 485, 527, 529, 530, 537, 569
24-*n*-propylcholesterols 527
24-propyldiacholestane ratio 561
24-propyldiacholestanes 561
prospect 751
proteins 711, 725
proteobacteria 657, 716
Proterozoic Eon 714–19, 763
proto-continents 712
Proto-Mediterranean 741
Protosalviania 726
Proto-South Atlantic Ocean 735–6, 847
protostomes 717
Prototaxites 726
prototracheophytes 724, 727
Proto-Zagros 861
protozoa 576
Prudhoe Bay Field, Alaska 477, 563, 616, 812, 826, 883, 896
prymnesiophyte algae 531
pseudo-biomarker 501
Pseudofagus 579
pseudohomologous series 498, 514, 516, 524, 532, 552, 556, 564, 565, 615, 691
Pseudomonas 652, 653
psilophytes *see* vascular plant
psilophyton 728
psychrophilic 503, 505, 506
pteridosperms (seed ferns) 578, 596, 729, 733
pterosaur 745
PTV *see* injection
Pucará Group, Peru 825
Pueblo, Colorado 902
Puente Formation Schist-Conglomerate, California 563
Puertollano oil shale, Spain 693
Pujamana Member, Colombia 909
Purana basins, India 768
purple sulfur bacteria *see Chromatiaceae*
Putamayo Basin, South America 907
pycnocline 829, 875

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Pyrenees 741
pyrite 815
pyrobitumen 764, 816
  nodules 755, 763
Pyrodictium 647
Pyrolobus 647
pyrolysis/gas chromatography (py/GC) 828, 871, 906
pyrolysis/gas chromatography/mass spectrometry (py/GCMS) 479
pyrolyzate 664
pyrrhotite 980

Qaidam Basin, China 538, 544, 613, 871, 872, 946
Q compounds 591
Qingshankou Formation, China 738, 904
Q oils, Oman 526, 772, 774, 775, 966
Quaidam Basin, China 871
quantum structure–activity relationship (QSAR) 684
Quaternary Period 742–3
Queen Formation, USA 813
Quenguela Field, Angola 854
Querecual Formation, South America 942
quinones 655, 701
Quiriquire Field, Venezuela 696
Qunituco Formation, Argentina 893, 894
Qusaiba Member, Qalibah Formation, Saudi Arabia 631, 723, 791, 793

Rabi Kounga Field, Gabon 848
racemic 972, 973
radiogenic immobilization 755
radiolysis 698
Raghib well, Saudi Arabia 793
Ragusa Basin, Sicily 827
Rakopi Formation, New Zealand 919
Raney nickel 512, 520, 568, 594, 689, 690
rank *see* thermal maturity
Rann Formation, United Arab Emirates 791
Ras Fanar well, Gulf of Suez 915
Rastrites Shale, Sweden 723
Ratawai Shale, Iraq 867
rate constants 967, 968, 970, 971
Ravnefjeld Formation, Greenland 818
Ravni Kotari oil, Yugoslavia 554, 568
Raya Formation, South America 908
Ray Formation, South America 738
Raymond Field, Williston Basin 782
rearranged hopanes *see* diahopanes
rearranged sterane *see* diasteranes
rearrangement 582
recent sediments 504–5, 512, 518, 704
Recôncavo Basin, Brazil 840, 841
recovery *see* estimated ultimate recovery
Red Band fraction 498
red beds 714
Redondo Shale, Peru 930
redox potential (oxidoreduction potential) 499, 566, 603
Red River Formation, USA 765, 782, 789, 804
red tide 919
Redwater Reef Field, Canada 802
reflectance *see* vitrinite reflectance
regression 747, 749
regressive marine facies 837
Reindeer Supersequence, Canada 960
Renqui Field, China 772
reproduction 711, 716, 725
reptiles 732, 733
reservoir rock 475, 608
reservoir temperature 646, 647, 648, 659
resinite 542, 573
resorcinol 784
  lipids 780
retene 544, 582, 596, 597, 602, 750
retention time 556
Retort Shale Member, USA 814
reversed tricarboxylic acid cycle 606
reverse methanogenesis *see* anaerobic methane oxidation
Rhaetogonyaulax 531
Rhenish Mountains 723
Rhine Basin, Germany 566
Rhizobium 726
rhizoid 727
Rhizolenia 514–15
Rhodococcus 652
Rhynie Chert, Scotland 727, 796
rhyniophyte 724, 727
ribonucleic acid (RNA) 711
ribosomal RNA (rRNA) 648, 657, 726
ribozyme 711
Ribesalbes Basin, Spain 945
RIC *see* reconstructed ion chromatogram
Richards Sequence, Canada 960
Rimbey-Meadowbrook Trend, Canada 966
rimuane 543, 544, 545
Rincon Formation, California 562, 944
ring-opening 582
Rinkabeena Formation, Australia 770
Rio da Serra Brazilian stage 834
Riphean shales, eastern Siberia 766–8
risk for oil biodegradation 650
Riva di Solto Shale, Italy 822
RNA *see* ribonucleic acid
RNA enzymes *see* ribozymes
RNA-world 711
R_o *see* vitrinite reflectance
Roberts Mountains, Nevada 789
rock sample *see* sample quality, selection, storage
Rocky Mountains, USA 735
rodents 741
Rodda Formation, Australia 770
Rodinia 715
root nodule 726
Roper Groups Shale, Australia 765–6, 767
rosane 543, 544, 545
Rothschild family 935
Rotliegendes Group, Europe 814
Rough range oil, Australia 600
Rovesti Oil, Italy 568
Rozel Point, Utah 512, 515, 520
rRNA *see* ribosomal RNA
Rub al Khali Basin, Middle East 855
Rubiales Field, Llanos Basin, Colombia 555
Rubielos de Mora Basin, Spain 945
Rudeis Formation, Gulf of Suez 915
rudists 740, 745
Ruhr District, Germany 551
Rundle Group, Canada 807
Rundle oil shale, Australia 928
Rundle-type oil shale *see* lacosite
Rutaceae 577
ruthenium tetroxide (RuO_4) 568

Saanich Inlet, British Columbia 596
Saar District, Germany 551
Sabah Delta, Borneo 942
Sabhka 487, 584, 880
saddle dolomite 816
Sadlerochit Formation, Alaska 826
Sag River Formation, Alaska 826
Sag River oil, Alaska 556, 557
Saint-Cecile, Camargue, France 580
Sakhalin Island, Russia 695, 742, 941–2
Salada Member, Colombia 909
Salado Formation, New Mexico 649
Salina A-1 carbonates, USA 794
Salina Basin, Gulf of Mexico 878, 879
saline 488, 838, 839, 850
salinity 488–9, 501, 646, 649, 972
  stratification 576, 814, 817
salt diapir 649
Salym Field, West Siberia 889
San Andres Formation, USA 813
San Cristobal Formation, Peru 930
Sandakan Delta, Borneo 942
sandstone breccia 527, 574, 668
Sangerhausen Basin, Germany 816
San Joaquin Basin, California 479, 742

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

San Jorge Basin, Argentina 894
San Juan Basin, New Mexico 834, 902, 904
Sanmiguelia 739
Santa Barbara Basin, California 715, 957, 960
Santa Barbara Channel, California 641
Santa Barbara-Ventura Basin, California 562, 945
Santa Cruz-Tarija Province, South America 796
Santa Maria Basin, California 510, 606, 619, 628, 641, 705, 706, 707, 945, 946, 977, 978
Santa Maria oil, Italy 570
Santa Monica Basin, California 576
Santos Basin, South America 835, 852
Santos well, Middle Magdalena Basin, Colombia 549
São Francisco Basin, Brazil 768
sapropel 741
Sarcinochrysidales 527
Sarcopterygii 724
sargasterol *see* fucosterol
Sargelu Formation, Iran 736, 863, 866
Sarriah Member, Safiq Formation, Oman 791
Sassendalen Group, North Atlantic 825
saturate/aromatic ratio 641
saturated hydrocarbons (saturates) 477
saturated hydrocarbon UCM *see* unresolved complex mixture
sauropods 736
Sava Depression, Croatia 947
Sayindere Formation, Turkey 915
Sayyala Field, Oman 774, 775
S/C *see* atomic S/C
Scales Formation, USA 788
scanning transmission X-ray microscopy (STXM) 727
scan run *see* scan analysis
Schei Point Group, Canada 825
Schistes Carton, Europe 830–2, 833
scores plot 481, 482
Scotian Shelf, Canada 968
scuticociliates 576
Sdom Formation, Israel 503, 512, 518
sea-bottom cores 704, 705
sea grass 489
sea level *see* global sea level
seal rock (cap rock) 754
8, 14-secohopanes 600, 692–3, 797
17, 21-secohopanes 552, 559, 572
secondary migration 965
secondary porosity 700
secondary processes 478
Second White Speckled (Second White Specks) Shale, Canada 901
sedimentation rate
  Pennsylvanian-Permian, USA 810
Sedlec well, Czech Republic 538
seed coat 739
seed ferns *see* pteridosperms
seed leaf *see* cotyledon
seed plants *see* vascular plants
seeds 729, 738
seep oil 537, 706
selected ion monitoring (SIM, multiple ion detection, MID) 221, 611
selected ion recording (SIR) *see* selected ion monitoring
Senonian Limestone, Dead Sea *see* Ghareb Formation
sequence stratigraphy 483, 803, 862, 909
Sergipe-Alagoas Basin, Brazil 835, 846, 847
Serpiano oil shale, Switzerland 603
serratanes 578–9, 691
Seychelles Microplate 872–4
Shahejie Formation, China 522, 579, 772, 926, 928
Sharawra Formation, Qatar 791
Shark Bay, Australia 713
sharks 731, 736
Sharon Springs Member, USA 902
Shengli Field, China 610, 647
Shilaif Formation, Southern Gulf Basin 860, 867, 869
Shinjo Basin, Japan 513
shocked quartz 745, 746
Shoemaker–Levy 9 comet 745
Shu'aiba Formation, Southern Gulf Basin 772, 860, 867
Shublik Formation, Alaska 556, 557, 735, 825, 827, 896, 897
Shublik-Otuk oils 883, 885
Shublik-Otuk source rocks 898
shungite *see* Karalian shungite
Shuntar Formation, East Siberia 768
Shuram Formation, Oman 771, 772
Shushufindi-Aguarico Field, Ecuador 912
Sibang Limestone, Gabon Basin 849
Siberia 715, 719, 723
Siberian Craton 767
Siberian Traps 748
Sichuan Basin, China 772
side-chain scission 632
siderite 714
Sierra Nevada Mountains, USA 735
Sigillaria 729
Siglia paraffin dirt, Chile 688
sigma bond *see* covalent bond
signal-to-noise 527
silica 714
silicalite *see* ZSM-5
silled basin 790
Silurian paleo-plate reconstruction 722
Silurian Period 722–3
Silurian–Devonian highstand 774
Silurian source rocks 776, 790–4
SIM *see* selected ion monitoring
SIMCA *see* soft independent modeling of class analogy
simonellite 596, 597, 834
Simpson Group, USA 765, 783, 812, 813
Simpson-Ellenburger(.), USA 789
simulated distillation *see* distillation
sinister *see* S configuration
Sirte Basin, Libya 914–15
Sirte Formation, Libya 738, 914–15
Sisi well, Mahakam Delta 952, 953, 955, 956
Sisquoc Formation, California 562
Skull Creek Shale, USA 738, 900
Slave Craton, Canada 711
Slavonija-Srijem Depression, Croatia 948
slime molds 716
Smackover Formation, Gulf of Mexico 735, 877
smoke 602
Smoking Hills Formation, Canada 959
Smoky Hill Member, USA 901, 903
snowball Earth 768
sodium methane thiolate 504
soft independent modeling of class analogy (SIMCA) 482
solanesol 589
solar flare 745
solar system 709
solid bitumens 478–9
solubilization 613, 964–5
solvent-split injection *see* injection
Somerset Island, Canada 716
Song Hong Basin, Vietman 938, 939
Songliao Basin, China 904, 905
soot 602, 745, 750
sour crude *see* sulfur-rich oil
Sour Lake Field, Texas 687
source input and depositional environment 982–3
source potential index (SPI) 872
  Gulf of Mexico, Upper Jurassic 879
source-related biomarker parameters 476, 478, 483–90, 606

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

source rocks 475, 608, 647, 763
carbonate 569, 571, 588, 616, 630, 641, 744, 771, 776, 851
carbonate versus clastic 533
carbonate versus shale 487–8
character from oil composition 487–90
evaporitic 588, 850
gas-prone 752
marine carbonate 536
marine deltaic 490, 536
marine shale 536
marl 569
oil-prone 752
South American basins 907
South Atlantic 835, 836, 858, 859
South Barrow wells, Alaska 812
South Belridge Field, California 686, 689, 691
Southern Gas Basin, Europe 811
Southern Gulf Basin (Rub Al Khali Basin) 859
South Florida Basin, USA 555
Southern Permian Basin, Europe 814
South Mekong Basin, Vietnam 940
South Sumatra Basin, Indonesia 573, 624
South Terekheveskaya Field, Russia 800
South Timbalier Field, Gulf of Mexico 647
space-filled projection *see* structural notation
Sparta Formation, Gulf of Mexico 882
Spechts Ferry Member, Decorah Formation 780, 781, 783
speculative(?) 752
Spekk Formation, Norway 827
spermatophyte 726
sphenophyte *see* sphenopsids
sphenopsids (sphenopsida) 724, 728, 729, 731, 733
Spindletop, Texas 687
split injection *see* injection
splitless injection *see* injection
sponges *see* porifera
sporangia 727
spore coloration index *see* thermal alteration index
spores 721, 724, 725, 726, 727
sporophyte 726
sporopollenin 725, 727
Sprayberry Formation, Texas 813
Sprendlinger Horst, Germany 926
squalane (2, 6, 10, 15, 19, 23-hexamethyltetracosane) 484, 498, 507, 512
squalene 498, 506, 507, 509, 511–12, 552, 713
squalene-hopene cyclase (squalene cyclase) 591
stable carbon isotope ratios
C_{29} *n*-alkane 746
carbonates 816, 817, 829, 890, 891
forams 921, 922, 957
oils 977, 978
organic carbon 829, 892, 902
wood 892
Standard Light Antarctic Precipitation *see* SLAP
Statfjord Formation, North Sea 828
steam flooding 689
sterane isomerization, $\beta\beta/(\beta\beta + \alpha\alpha)$ 628–629, 634, 662, 706, 970, 978
sterane isomerization, 20S/(20S + 20R) 566, 622, 625–8, 634, 674, 965, 966, 967, 968, 969
C_{30} sterane index 527–30
steranes 714, 763
biodegradation 537, 665, 674–5
C_{27} 662, 772
C_{28}/C_{29} 490, 526–7
C_{29} 607, 771, 818
C_{29} $\alpha\alpha\alpha$ 20S 625
C_{29} $\alpha\beta\beta$ 662
C_{30} sterane index 574
C_{30} steranes
fingerprint 611
steranes/hopanes 524
steranes/hopanes (regular steranes/17α-hopanes) 524
steranes/triterpanes 524
Δ2-sterenes 533
sterenes 830
sterilization 648, 702
sterols 483, 533, 583, 714
stereoisomerization 611
steroid
aromatization [TA/(MA + TA) 627, 631–2, 705, 706, 966, 967, 968, 970, 972
ketones 653
stick projection *see* structural notation
stigmastanes (24-ethylcholestanes) 611, 768
Stirling Range Formation, Australia 718
Stockinford Shales, UK 774
stomata 725, 727
stonewart 725
STP *see* standard temperature and pressure
stratification (stratified water) 575, 576
stratified water 820, 845, 899
Stratigraphic-39 well, Saudi Arabia 631
Strawn Formation, USA 813
Strelly Pool Chert, Australia 712
Streppenosa Formation, Sicily 827
stretophyta 725
stromatolites 569, 712, 713, 714, 720
stromatoporid 530
strontium isotopes 749, 890
Sublett Basin, USA 814
sublittoral facies 924
suboxic 567, 721
success ratio 753, 822, 874
Sudbury Impact Crater, Ontario 747
Sudr Formation, Middle East 915
Suerte well, Middle Magdalena Basin, Colombia 549
sugiol 546, 547
Suket Shales, India 716
Sulaiy Formation, Iraq 860, 866
sulfate 657, 705
reducing bacteria 509, 604, 653, 654, 655, 656, 705
sulfones 653
sulfur 488, 500, 573, 629, 641, 663, 707
sulfur isotopes 749, 816, 817
sulfur-rich oils 563
Sumatra 931, 935–39
Sunda Basin, Sumatra 939
Sunfish well, Cook Inlet 834
Sunniland Field, Florida 880
Sunniland Formation, Florida 879–80
supercritical fluid extraction 981
supercritical fluid chromatography/mass spectrometry (SFC/MS) 603
supernova 745, 749
superoxide anions 713
superoxide dimutase 713
superplumes 768
supralittoral facies 924
surfactant 599
Surma Basin, Bangladesh 547
Svanbergfjellet Formation, Spitsbergen 716
Sverdrup Basin, Canada 825
Swanson River Field, Cook Inlet 554
sweet crude *see* low-sulfur oil
Sydney Basin, Australia 812
Sylvan Shale, USA 722, 777
symbiont 726
Synapsida 733
synrift facies 837
syntrophic consortia 509–11, 656, 657
syntrophic metabolism 656

Tabei Uplift, China 785, 787
table of hydrocarbon accumulations 752

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

tabulates 721
Tagrifet Formation 915
T-branched alkanes 493, 494–6
TAI *see* thermal alteration index
Talang Akar Formation, Sumatra 627, 931, 939, 976
Talara Basin, Peru 907, 930, 932, 933
Talc-Stevensitic Sequence 842
TA/(MA + TA) *see* monoaromatic steroid aromatization
Tambora Field, Mahakam Delta 951, 953, 954, 955
Tampen Spur, North Sea 648
Tampico-Misantla Basin, Gulf of Mexico 878
tandem mass spectrometry 605
  see also GCMS/MS
Tanezzuft Shale, North Africa 723, 791, 792
Tanf Formation, Syria 791
Tanzanian paraffin dirt 688–9
Taoudenni Basin, Mauritania 720
Tapeats Sandstone, Arizona 771
Tarafaya Basin, Morocco 913–14
Tarakan Delta, Borneo 942
Taranaki Basin, New Zealand 544, 550, 597, 918–19
taraxastanes 580, 581
taraxerenes 618
tar ball 873
Tarim Basin, China 785, 787, 870, 871
Tarn Field, Alaska 826, 898
Tarraco oil, Spain 507, 520
Tarragona Basin, Spain 947, 948
tar sands 658
Tasmanite oil shale, Tasmania 591
Tasmanites 552, 556, 557, 796
Taxodiaceae 547, 551
taxodione acetate 546
Taxodium 546, 547
taxon-specific biomarkers 491, 492
Tazhong Uplift, China 785, 787
TBR *see* trimethylnaphthalene ratio
TCI *see* transmittance color index
TEHRGC *see* thermal extraction high-reolustion gas chromatogram
tektite 745
telalginite 779, 784, 785, 895
teleost fish 737
Tempisque Basin, Costa Rica 917
Tent Island Formation, Canada 960
Termit Basin, Africa 837
Terang-Sirasun Field, Indonesia 509
terminal addition 655
ternary diagram (C_{27}–C_{28}–C_{29}) 410–7.1
  diasteranes 536
  C-ring monoaromatic steroids 583–4, 978, 979
  steranes 476, 483, 485, 525–6, 536, 871, 978, 979
  triaromatic steroids 586–8
terpane *m/z* 191 fingerprint 551–5, 611, 697, 797, 880
terrane 720
Terra Nova Field, Newfoundland 888
terrigenous/aquatic ratios (TAR) 493
terrigenous oils 490, 939
terrigenous organic matter 499, 580
terrestrial impact craters 747
Tertiary source rocks 918–60
Tethys Sea (Ocean) 732, 733, 734, 735, 737, 740, 741, 901, 932, 947
tetracorals 721
tetracyclic diterpanes 549–51
tetracyclic polyprenoids (TPP) 487, 560–1
tetracyclic terpanes 552, 927
C_{24} tetracyclic terpane 485
C_{24} tetracyclic terpane ratios 559–60
tetrad spore 727
Tetraedon 927
tetraether lipids 497, 503–5, 506
5,6,7,8-tetrahydrocadalene 981
tetrahymanol (gammaceran-3β-ol) 575–6, 591
Tetrahymena 576
tetrakishomohopanes 808
1,2,3,4-tetramethylbenzene 801
2,6,10,14-tetramethylhexadecane *see* phytane
2,6,15,19-tetramethylicosane (TMI) 505, 511
1,2,5,6-tetramethylnaphthalene (TeMN) 582
1,3,6,7-tetramethylnaphthalene (1, 3, 6, 7-TeMN) 596, 597
tetramethylnaphthalene ratio (TeBR) 671, 672
tetramethylnaphthalenes 670
2,6,10,14-tetramethylpentadecane *see* pristane
tetramethylsqualane 518, 519
1,1,7,8-tetramethyl-1,2,3,4-tetrahydrophenanthrene 591
1,1,5,6-tetramethyltetralin 596
Thamama Group, Southern Gulf Basin 860, 867
therapod 737
therapsids 733, 735
thermal gradient 650
thermal maturity 535, 608–9
  criteria for biomarker parameters 609–10
thermal maturity-dependent biomarker ratios 478, 612
thermal stress parameters 608–9
thermoacidophilic archaea
Thermoanaerobacter 648
thermochemical sulfate reduction (TSR) 608, 815, 825
Thermodesulfobacterium 648
thermophile 647
thermophilic 599
  eubacteria 497
Thermodesulfobacterium 497
Thermoplasma 599
Thermopolis Member 900
thermospray 603
Thermotoga 648
thin-layer chromatography/flame ionization detection (TLC/FID) *see* iatroscan
Thiobacillus 562
Thiomargarita 562
Thiomicrospira 562
Thioploca 562
Thiothrix 562
Thompson B-F diagram *see* B-F diagram
thorite 755
thorium/uranium 719
thylakoid membrane 726
Tibet Plateau 871
TIC *see* reconstructed ion chromatogram
tillite 716
Timan-Pechora Basin, Russia 799, 800
timing-risk chart *see* events chart
Tithonian source rocks
TLC *see* thin-layer chromatography
TMI *see* 2,6,15,19-tetramethylicosane
Tm (C_{27} 17α-22,29,30-trisnorhopane or 17α-trisnorhopane) 555, 565, 581, 616, 617, 686–7
T_{max} 627
  vs. PMP 635
TNH *see* 25, 28, 30-trisnorhopane
TNH/(TNH + hopanes) 619
TNR *see* trimethylnaphthalene ratio
TNS *see* 25,28,30-trinorhopane
Toarcian Shale, Europe 532, 535, 584, 617, 628, 828–30, 831, 972
Toarcian Shale, Madagascar 831
tobacco 539
Toca Formation, Africa 841
TOC *see* total organic carbon
tocopherols 500, 501
Todilto Formation, New Mexico 834
toluene 653, 654, 658, 659, 828

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

TOM *see* total organic matter
Tomachi Formation, Bolivia 725, 801–2
Toolachee Formation, Australia 820, 821
Toolebuc Formation, Australia 738, 905–7
torbanites 495, 517, 518, 520, 521, 597, 812
Torok Shale, U.S.A. 738, 826, 895, 897
Torok-Nanushuk(.) 897
total acid number (TAN) 700–2
total ion chromatogram *see* reconstructed ion chromatogram
total organic carbon (TOC, C_{org})
  Agrio Formation 894–5
  Bakken Formation, North America 804, 805
  Bazhenov Formation, West Siberia 536, 540, 889
  Black Sea sediments 496
  Greenhorn Cyclothem 902
  Jet Rock 892
  Monterey Formation 945
  Paris Basin, Liassic 831
  Tyumen Formation, West Siberia 536
  Vaca Muerta 893
total petroleum system 751
TAPH *see* total polycyclic aromatic hydrocarbons
TPP *see* tetracyclic polyprenoids
trace fossils (ichnofossils) 717, 718
tracheid 727
tracheophytes 724, 726
Trafras Group, Brazil 768
training set 482
Trans-Brazilian Shear 834
transgression 748, 774, 777, 790, 864, 899, 905, 908
transgressive marine facies 837, 851
transgressive systems tract (TST) 481, 482, 484, 862, 909, 910, 956, 957
transpiration 725
trap 754
Traralgon Formation, Australia 917
Trenton-Black River Formation, Michigan 722, 783, 785, 786
Trenton Group, North America 765, 784–5
Trento Plateau, Italy 830
triaromatic dinosteroids 588
triaromatic (TA) steroids 586, 587, 632
  C_{26}/C_{28}S vs. C_{27}/C_{28}R 586
  C_{26} 20S/(20S + 20R) 634
  TA(I)/TA(I + II) 633–4
  20S/(20S + 20R) 634
Triassic Black Shale, Italy 593
Triassic carbonates
  Arabian Platform 824
  Swiss Alps 824
Triassic–Jurassic boundary 744, 746, 747
Triassic mass extinction 743
Triassic mudrocks, Barents Sea 483, 615, 822
Triassic paleo-plate reconstruction 734
Triassic Period 733–5
Triassic rift sequences, North America 824–5
Triassic source rocks 823, 825
tricadinanes 547, 548
tricyclic biphytane 506
tricyclic diterpanes 541–7, 552
tricyclics/17α-hopanes 556, 615–16
tricyclic terpanes (cheilanthanes) 485, 552, 555–8, 591, 615, 662, 694, 695, 696, 826, 927
  age 490
  extended tricyclic terpane ratio (ETR) 558–9, 749
  C_{22}/C_{21} 558
  C_{23} tricyclic terpane/hopane 556
  C_{24}/C_{23} 558
  C_{26}/C_{25} 487, 558, 559, 569
tricyclohexaprenane 555, 556
tricyclohexaprenol 552, 556, 557
tricyclooctaprenol 556
3,4,5-trihydroxybenzoic acid *see* gallic acid
trilete spore 727
trilobites 720, 721, 733, 745, 747
trimerophyte 727
trimethylalkanes 493
trimethylbiphenyls 672
4,23,24-trimethylcholesterols 588
trimethylchromans 485
2,6,10-trimethyldodecane (*see* farnesane)
2,6,10-trimethyl-7-(3-methylbutyl)-dodecane 502
trimethylnaphthalenes 597–9, 644, 670, 973, 974
1,2,5-trimethylnaphthalene (TMN) 582, 596, 597
1,2,7-trimethylnaphthalene 597
1,3,6-trimethylnaphthalene 596
trimethylnaphthalene depositional environment (TDE) ratios 597
trimethylnaphthalene ratio (TNR-1, TBR, TP-1) 644, 671, 672, 974
2,6,10-trimethylpentadecane *see* norpristane
trinitrotoluene (TNT) 645
17β-trinorhopane 688
triple quadrupole mass spectrometer 612
triple-sector mass spectrometer *see* triple quadrupole mass spectrometer
tripolblast bilateralians 718
Tripoli Unit, Spain 957–8
17α-trisnorhopane *see* Tm
17α-22,29,30-trisnorhopane *see* Tm
18α-trisnorhopane II *see* Ts
22,29,30-trisnor-17β-hopane 616
25,28,30-trisnorhopane (TNH) 485, 561–3, 618–19, 678, 686, 687, 694
18α-22,29,30-trisnorneohopane *see* Ts
Trombetas Formation, South America 723
Ts (C_{27}Ts or 18α-22,29,30-trisnorneohopane) 552, 553, 555, 565, 581, 616, 686–7
TSF *see* total scanning fluorescence
Ts/hopane 617
Ts/Tm *see* Ts/(Ts + Tm)
Ts/(Ts + Tm) 616–17, 618, 686, 687
tsunami 745
Tucano-Recôncavo Basin, South America 834
Tuna well, Australia 547, 624
Tunu well, Mahakam Delta 481, 952, 953, 955
turbidites 851
Turkmenistan 932
Turpan Basin, China 870, 871
Turpan-Hami Basin, China
Tuscaloosa Formation, USA 881
Tuwaiq/Hanifa-Arab Petroleum System 755
Tuwaiq Mountain Formation, Saudi Arabia 864, 865
Tuxedni Group, Alaska 833–4
two-dimensional GC *see* gas chromatography
two-dimensional NMR *see* nuclear magnetic resonance
Tynec well, Austria 538, 541, 566, 586
type I 725
type IS 946
type II 563, 725
type IIS 563, 879, 885
type II/III 563
type III 567, 642, 725, 730, 851
type curve *see* stable carbon isotope type-curve
Tyrannosaurus 737
Tyumen Formation, West Siberia 573, 574

Ucayali Basin, Peru 811, 812, 813, 825
UCM *see* unresolved complex mixture
Ugut well, West Siberia 889

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Uinta Basin, Utah 479, 523, 675, 921, 926, 927
Uinta Formation, USA 479
ultralaminae 928
Umbrian Basin, Italy 830, 831
Umiat-Simpson Oils 898
Umir Formation, Colombia 549
underfilled lake 817, 837, 838, 839, 840, 844, 846, 858
underground leakage *see* oil spills
UNESCO *see* United Nations Educational Scientific and Cultural Organization
uniformitarianism 745
United Nations Educational, Scientific and Cultural Organization (UNESCO) 928
unresolved complex mixture (UCM) 659, 667, 668
Upanema Member, Brazil 846
Upper Magdalena Valley, Colombia 907, 908, 910, 911, 913
Upper Zakum Field, United Arab Emirates 864, 866
upwelling 492, 516, 721, 722, 789, 790, 798, 814, 825
  Peru 519, 930
Ural Mountains 723
Ural Trough 740
uraninite 714, 755
uranium 777, 905
urea adduction 494
ursanes 580, 697
urs-12-ene 697, 699
U-Shale Formation, Oman 771
US-Y molecular sieve *see* ultrastable-Y
Utica Shale, USA 722, 723, 777, 779, 785–8

Vaalbara Supercontinent 712
Vaca Muerta Formation, Argentina 893, 894, 896
vanadium 663
vanadyl ion 604
Van-Egan well, West Siberia 682, 683
Van Krevelen diagram
  modified 831, 870, 882, 934
vaporizing injection *see* injection
Vargner Ice Age 716
Várkeszö crater, Hungary 948
varve 834
vascular land plants *see* tracheophytes
vascular system (tracheids) 725
Vedreshev Formation, East Siberia 768
Velkerri Formation, Australia 765, 766, 767
Verkhne-Chonskaya Field, Eastern Siberia 767
Vermelha Formation, West Africa 853
Vermilion Field, Louisiana 965
Victorian brown coals (Traralgon Formation) 917
Vienna Basin, Austria 538, 947
Vienna PDB *see* VPDB
Vienna Standard Mean Ocean Water *see* VSMOW
Vietnam 938, 939
Viking Graben, North Sea 648, 814, 884
Villafortuna-Gaggiano Complex, Italy 824
Villahermosa Area, Gulf of Mexico 879
Ville Perdue Field, Paris Basin, France 833
Villeta Formation, Colombia 738, 907, 911, 913
Vindhyan Basin, India 768
Vinini Shale, USA 722, 777, 779, 789–90
violaxanthin *see* carotenoid
Visayan Basin, Philippines 624, 626
viscosity 659, 660, 662, 663
vitamin C 713
vitamin E 713
vitrinite 573, 727
vitrinite reflectance (R_o in oil, R_r random, or R_m mean) 609, 613, 618, 627, 642, 727, 753, 816, 822, 893, 894–5, 924
  versus biomarker ratios 612
  versus dimethylnaphthalene ratio (DNR) 643
  versus methylnaphthalene ratio (MNR) 643
  versus methylphenanthrene index (MPI) 642
volcanism 748
Voltziales 551, 730
Vredefort impact structure, Kaapvaal 747

Wabasca heavy oil, Canada 645
Walcott Member, Kwagunt Formation, Utah 771
Walvis Bay, West Africa 519, 595
Wancoocha Field, Australia 821
Warrawoona Group, Australia 712, 713, 755
Washakie Basin, USA 921
Wasia Group, Arabian Platform 867
Wastach Formation, USA 479, 921
Watchet, North Somerset, UK 531
water injection 649
water washing 658, 670, 702
weathering 725, 798
Weiyuan gas field, China 772
Wessex Basin, UK 648
West Belayim Field, Egypt 916
Western Canada Basin 477, 591, 645, 801, 807–9, 832–3
Western Interior Seaway 899–904
West Greenland 580
West Tevlin Field, Russia 888
whales 74
Whitby Mudstone Formation, Port Mulgrave area, Yorkshire, UK 892
Whitehill Formation, South Africa 812
White Pine, Michigan 610, 766
White Tiger Field, Vietnam *see* Bach Ho Field
Wilcox Formation, Gulf of Mexico 882
Wilkins Peak Member, USA 923, 924, 946
Williston Basin, North America 789, 796–7, 803, 806, 809
Wingayongo Seep, Tanzania 689, 690
Winnipeg Formation, North America 765, 783, 789, 805
Winnipegosis Formation, North America 796–7, 804, 808
Wiriagar Well, Indonesia 529, 544
wire-frame projection *see* structural notation
Witwatersrand Supergroup, South Africa 763
Womble Shale, USA 779
Woodbine Formation, East Texas 881
Woodford Shale, USA 725, 803, 805–6, 807, 808, 812, 813
Woodleigh Impact Crater, Australia 746, 747
wood tar *see* pitch
Wumishan Formation, China 772

Xanthomonas 652
xanthones 672–4
xanthophyll 522
X-compounds *see* mid-chain monomethylalkanes
Xiaomeigou Formation, China 871
Xinjiang Uygur, China 869–71, 872
xylenes 653, 659

Yalco Formation, Australia 765
Yanshan Fold Belt, China 772
Yeoman Formation, Williston Basin 765
Yunnan Province, China 764
Yurubchen-Tokhom Field, Eastern Siberia 710, 719, 767, 769

Zagros-Mesopotamia region 755, 763
Zagros Mountains, Iran 741, 859

© Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-0-521-83762-0 - The Biomarker Guide: II. Biomarkers and Isotopes in Petroleum Systems and Earth History, Second Edition
K. E. Peters, C. C. Walters and J. M. Moldowan
Index
More information

Zakum Field, United Arab Emirates 867, 869
Zala Basin, Hungary 947
Zaonezhskaya Formation, Karalia, Russia 764
Zdanice well, Czech Republic 538, 541, 566, 586, 636, 637
zeaxanthin *see* carotenoid
Zechstein Basin, Germany
Zechstein Formation, Germany 814–17
Zeitz Formation, Germany 547
Zhungeer Basin, China *see* Junggar Basin
zigzag projection *see* structural notation
zinc ore 825
Zingjingzigou Formation *see* Jingjingzigou Formation
zircon 711
Zostera 489
zosterophyllophyte 727
ZSM-5 494
zygote 726

© Cambridge University Press www.cambridge.org