APPENDIX

CHEMICAL AND PHYSICAL DATA FOR SOME NON-HETEROCYCLIC POLYCYCLIC AROMATIC HYDROCARBONS

The molecular formulae and relative molecular masses of these compounds are given in Table 1. Their structural formulae are given in Figure 1 and their selected physical and chemical properties are summarized in Table 2.

1. Acenaphthene

1.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 83-32-9
Chem. Abstr. Name: Acenaphthene
IUPAC Systematic Name: Acenaphthene
Synonyms: 1,8-dihydroacenaphthene; 1,2-dihydroacenaphthylene; 1,8-ethylene-naphthalene; peri-ethylenenaphthalene; naphthyleneethylene

1.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006) unless otherwise specified

(a) *Description*: Orthorhombic bipyramidal needles from alcohol
(b) *Boiling-point*: 279 °C
(c) *Melting-point*: 95 °C
(d) *Density*: 1.189
(e) *Spectroscopy data*: ultraviolet (UV)/visible (VIS), infrared, fluorescence, mass and nuclear magnetic resonance (NMR) spectral data have been reported (Karcher *et al.*, 1988; NIST, 2005).
(f) *Water solubility*: 3.9 mg/L at 25 °C (Miller *et al.*, 1985)
(g) *Vapour pressure*: 0.29 Pa at 25 °C (Sonnefeld *et al.*, 1983)
(h) *Log K_{ow} (octanol-water)*: 3.92 (Sangster Research Laboratories, 2005)

(i) *Henry's law constant*: 18.5 Pa m^3/mol at 25 °C (Bamford *et al.*, 1999)
(j) *Atmospheric OH rate constant*: $8.0 \pm 0.4 \times 10^{-11}$ cm^3/mol/s (Reisen & Arey, 2002)

2. Acepyrene

2.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 25732-74-5
Chem. Abstr. Name: Cyclopenta[cd]pyrene, 3,4-dihydro-
IUPAC Systematic Name: 3,4-Dihydrocyclopenta[*cd*]pyrene
Synonyms: 2,3-Acepyrene*; 3,4-dimethylenepyrene
*Alternative numbering convention

2.2 *Chemical and physical properties of the pure substance*

(a) *Description*: White crystals (Tintel *et al.*, 1983)
(b) *Melting-point*: 133–134 °C (Tintel *et al.*, 1983; Otero-Lobato, 2005)
(c) *Spectroscopy data*: NMR (Tintel *et al.*, 1983; Otero-Lobato *et al.*, 2005), UV, infrared and mass spectral data have been reported (Tintel *et al.*, 1983; NIST, 1998)

3. Anthanthrene

3.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 191-26-4
Chem. Abstr. Name: Dibenzo[def,mno]chrysene
IUPAC Systematic Name: Dibenzo[*def,mno*]chrysene
Synonym: Dibenzo[*cd,jk*]pyrene

3.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Golden yellow plates (recrystallized from xylene) (Clar, 1964)
(b) *Melting-point*: 264 °C (Karcher *et al.*, 1985)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1985; NIST, 1998).
(d) *Log K_{ow} (octanol–water)*: 7.04 (Howard & Meylan, 1997; Sangster Research Laboratories, 2005)

4. Anthracene

4.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 120-12-7
Chem. Abstr. Name: Anthracene
IUPAC Systematic Name: Anthracene*
Synonyms: Anthracin; paranaphthalene
*Numbering exception

4.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) *Description*: Monoclinic plates from alcohol. When pure, colourless with violet fluorescence; when impure (due to tetracene, naphthacene), yellow with green fluorescence
(b) *Boiling-point*: 342 °C
(c) *Melting-point*: 218 °C; 216.4 °C (Karcher *et al.*, 1985; Lide, 2005)
(d) *Density*: 1.25 at 27 °C relative to water at 4 °C; 1.283 at 25 °C relative to water at 4 °C (Lide, 2005)
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1985; NIST, 1998).
(f) *Water solubility*: 0.0436 at 25 °C (May *et al.*, 1983)
(g) *Vapour pressure*: 8.0×10^{-4} Pa at 25 °C (Sonnefeld *et al.*, 1983)
(h) *Log K_{ow} (octanol–water)*: 4.45 (Howard & Meylan, 1997); 4.54 (Miller *et al.*, 1985)
(i) *Henry's law constant*: 5.64 Pa m^3/mol at 25 °C (Bamford *et al.*, 1999)

5. 11*H*-Benz[*bc*]aceanthrylene

5.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 202-94-8
Chem. Abstr. Name: 11H-Benz[bc]aceanthrylene
IUPAC Systematic Name: 11H-Benz[*bc*]aceanthrylene
Synonyms: Benz[a]anthracene, 1,12-methylene-; 1′,9-methylene-1,2-benzanthracene

5.2 *Chemical and physical properties of the pure substance*

(a) *Melting-point*: 123 °C (Ray & Harvey, 1983); 120.5-121 °C (Harvey *et al.*, 1991)
(b) *Spectroscopy data*: NMR (Ray & Harvey, 1983) and UV/VIS (Harvey *et al.*, 1991) spectra have been reported.

6. Benz[*j*]aceanthrylene

6.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 202-33-5
Chem. Abstr. Name: Benz[j]aceanthrylene
IUPAC Systematic Name: Benz[*j*]aceanthrylene
Synonyms: Benz[7,8]aceanthrylene; cholanthrylene; naphth[2,1-*d*]acenaphthylene

6.2 *Chemical and physical properties of the pure substance*

From Sangaiah *et al.* (1983)
(a) Description: Orange plates from hexane
(b) Melting-point: 170–171 °C
(c) Spectroscopy data: UV/VIS, mass and NMR spectral data have been reported.

7. Benz[*l*]aceanthrylene

7.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 211-91-6
Chem. Abstr. Name: Benz[l]aceanthrylene
IUPAC Systematic Name: Benz[*l*]aceanthrylene
Synonym: Naphth[1,2-*d*]acenaphthylene

7.2 *Chemical and physical properties of the pure substance*

From Sangaiah *et al.* (1983)
(a) Melting-point: 157–158 °C
(b) Spectroscopy data: UV/VIS, mass and NMR spectral data have been reported.

8. Benz[*a*]anthracene

8.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 56-55-3
Chem. Abstr. Name: Benz[a]anthracene
IUPAC Systematic Name: Benz[*a*]anthracene
Synonyms: 1,2-Benz[*a*]anthracene; benzanthracene; 1,2-benzanthracene; benzanthrene; 1,2-benzanthrene; benzo[*a*]anthracene; benzoanthracene; 1,2-benzoanthracene; benzo[*b*]phenanthrene; 2,3-benzophenanthrene; tetraphene

8.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) Description: Plates from glacial acetic acid or alcohol with greenish-yellow fluorescence

(b) Melting-point: 160.7 °C (Karcher *et al.*, 1985)

(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

(d) Water solubility: 0.0090 mg/L at 25 °C (May *et al*., 1983)

(e) Vapour pressure: 2.8×10^{-5} Pa at 25 °C (Sonnefeld *et al*., 1983)

(f) Log K_{ow} (octanol–water): 5.91 (Miller *et al*., 1985; Sangster Research Laboratories, 2005)

(g) Henry's law constant: 1.22 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)

9. Benzo[*b*]chrysene

9.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 214-17-5
Chem. Abstr. Name: Benzo[b]chrysene
IUPAC Systematic Name: Benzo[*b*]chrysene
Synonyms: 2,3-Benzochrysene; benzo[*c*]tetraphene; 3,4-benzotetraphene; 1,2:6,7-dibenzophenanthrene; 2,3:7,8-dibenzophenanthrene*; naphth[2,1-*a*]anthracene
*Alternative numbering convention

9.2 *Chemical and physical properties of the pure substance*

(a) Description: Pale green-yellow leaves from xylene (Lide, 1992)

(b) Melting-point: 294 °C (Lide, 1992); 299.7 °C (Karcher *et al.*, 1985)

(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

(d) Log K_{ow} (octanol–water): 7.11 (Sangster Research Laboratories, 2005)

10. Benzo[*g*]chrysene

10.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 196-78-1
Chem. Abstr. Name: Benzo[g]chrysene
IUPAC Systematic Name: Benzo[*g*]chrysene
Synonyms: Benzo[*a*]triphenylene; 1,2:3,4-dibenzophenanthrene; 1,2,3,4-dibenzphenanthrene; 1,2:3,4:7,8-tribenznaphthalene

10.2 *Chemical and physical properties of the pure substance*

(a) *Melting-point*: 116 °C (Sukumaran & Harvey, 1981); 114 °C (Agarwal *et al.*, 1985); 112–114 °C (Utermoehlen *et al*., 1987)

(b) *Spectroscopy data*: Mass and NMR spectral data have been reported (Sukumaran & Harvey, 1981; Agarwal *et al.*, 1985).

11. Benzo[*a*]fluoranthene

11.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 203-33-8
Chem. Abstr. Name: Benz[a]aceanthrylene
IUPAC Systematic Name: Benz[*a*]aceanthrylene
Synonyms: 1,2-Benzfluoranthene; benzo[*a*]aceanthrylene; 1,2-benzofluoranthene; dibenzo[*c,lm*]fluorene

11.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Golden needles from petroleum ether (Cho & Harvey, 1987a)

(b) *Melting-point*: 146.3 °C (Karcher *et al.*, 1985); 143-145 °C (Cho & Harvey, 1987a)

(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; Cho & Harvey, 1987b)

12. Benzo[*b*]fluoranthene

12.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 205-99-2
Chem. Abstr. Name: Benz[e]acephenanthrylene
IUPAC Systematic Name: Benz[*e*]acephenanthrylene
Synonyms: 3,4-Benz[*e*]acephenanthrylene*; 2,3-benzfluoranthene; 3,4-benzfluoranthene*; benzo[*e*]fluoranthene; 3,4-benzofluoranthene*
*Alternative numbering convention

12.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Needles from benzene (Lide, 2005)

(b) *Melting-point*: 168 °C (Lide, 2005); 168.3 °C (Karcher *et al.*, 1985)

(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

(d) *Water solubility*: 0.0015 mg/L (Howard & Meylan, 1997)

(e) *Log K_{ow} (octanol–water)*: 5.78 (Sangster Research Laboratories, 2005)

(f) Henry's law constant: 0.051 Pa m^3/mol at 20 °C (ten Hulscher *et al.*, 1992)

13. Benzo[*ghi*]fluoranthene

13.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 203-12-3
Chem. Abstr. Name: Benzo[ghi]fluoranthene
IUPAC Systematic Name: Benzo[*ghi*]fluoranthene
Synonyms: 2,13-Benzofluoranthene*; 7,10-benzofluoranthene*; benzo[*mno*]fluoranthene
*Alternative numbering convention

13.2 *Chemical and physical properties of the pure substance*

(a) Description: Yellow needles with greenish-yellow fluorescence (recrystallized from petroleum ether); blue fluorescence in solution (Buckingham, 1996)
(b) Melting-point: 128.4 °C (Karcher *et al.*, 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1985; NIST, 1998).
(d) Log K_{ow} (octanol–water): 6.63 (Sangster Research Laboratories, 2005)

14. Benzo[*j*]fluoranthene

14.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 205-82-3
Chem. Abstr. Name: Benzo[j]fluoranthene
IUPAC Systematic Name: Benzo[*j*]fluoranthene
Synonyms: 7,8-Benzfluoranthene; 10,11-benzofluoranthene*; benzo-12,13-fluoranthene*; dibenzo[*a,jk*]fluorene
*Alternative numbering convention

14.2 *Chemical and physical properties of the pure substance*

(a) Description: Yellow plates from alcohol; needles from acetic acid (Lide, 2005)
(b) Melting-point: 165.4 (Karcher *et al.*, 1985); 166 °C (Lide, 2005)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1985; NIST, 1998).
(d) Water solubility: 0.0025 mg/L (Howard & Meylan, 1997)

15. Benzo[*k*]fluoranthene

15.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 207-08-9
Chem. Abstr. Name: Benzo[k]fluoranthene
IUPAC Systematic Name: Benzo[*k*]fluoranthene
Synonyms: 8,9-Benzfluoranthene; 8,9-benzofluoranthene; 11,12-benzofluoranthene*;
2,3,1′,8′-binaphthylene; dibenzo[*b*,*jk*]fluorene
*Alternative numbering convention

15.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Pale yellow needles from benzene (Lide, 2005)
(b) *Boiling-point*: 480 °C (Lide, 2005)
(c) *Melting-point*: 215.7 °C (Karcher *et al.*, 1985); 217 °C (Lide, 2005)
(d) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(e) *Water solubility*: 0.0008 mg/L at 25 °C (Pearlman *et al.*, 1984)
(f) *Log K_{ow} (octanol–water)*: 6.11 (Sangster Research Laboratories, 2005)
(g) *Henry's law constant*: 0.044 Pa m^3/mol at 20 °C (ten Hulscher *et al*., 1992)

16. Benzo[*a*]fluorene

16.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 238-84-6
Chem. Abstr. Name: 11H-Benzo[a]fluorene
IUPAC Systematic Name: 11*H*-Benzo[*a*]fluorene
Synonyms: 1,2-Benzofluorene; chrysofluorene

16.2 *Chemical and physical properties of the pure substance*

From Lide (2005), unless otherwise specified
(a) *Description*: Plates from acetone or acetic acid
(b) *Boiling-point*: 413 °C
(c) *Melting-point*: 189–190 °C
(d) *Spectroscopy data*: UV/VIS, infrared and mass spectral data have been reported (NIST, 1998, 2005).
(e) *Water solubility*: 0.045 mg/L at 25 °C (Miller *et al*., 1985)
(f) *Log K_{ow} (octanol–water)*: 5.40 (Sangster Research Laboratories, 2005)
(g) *Henry's law constant*: 2.70 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)

17. Benzo[*b*]fluorene

17.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 243-17-4
Chem. Abstr. Name: 11H-Benzo[b]fluorene
IUPAC Systematic Name: 11*H*-Benzo[*b*]fluorene
Synonym: 2,3-Benzofluorene

17.2 *Chemical and physical properties of the pure substance*

(a) Description: Crystals from petroleum ether or acetic acid (Buckingham, 1996)
(b) Boiling-point: 401–402 °C (Buckingham, 1996)
(c) Melting-point: 208–209 °C (Buckingham, 1996); 213.5 °C (Karcher *et al.*, 1988); 212 °C (Lide, 2005)
(d) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1988; NIST, 1998).
(e) Water solubility: 0.002 mg/L at 25 °C (Pearlman *et al.*, 1984; Miller *et al.*, 1985)
(f) Log K_{ow} (octanol–water): 5.75 (Sangster Research Laboratories, 2005)

18. Benzo[*c*]fluorene

18.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 205-12-9
Chem. Abstr. Name: 7H-Benzo[c]fluorene
IUPAC Systematic Name: 7*H*-Benzo[*c*]fluorene
Synonym: 3,4-Benzofluorene

18.2 *Chemical and physical properties of the pure substance*

(a) Description: Plates recrystallized from ethanol (Buckingham, 1996)
(b) Melting-point: 130–131 °C (Buckingham, 1996); 126.5 °C (Karcher *et al.*, 1988)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1988; NIST, 1998).

19. Benzo[*ghi*]perylene

19.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 191-24-2
Chem. Abstr. Name: Benzo[ghi]perylene

IUPAC Systematic Name: Benzo[*ghi*]perylene
Synonyms: 1,12-Benzoperylene; 1,12-benzperylene

19.2 *Chemical and physical properties of the pure substance*

(a) Description: Large, pale yellow-green plates from xylene (Clar, 1964)
(b) Melting-point: 278.3 °C (Karcher *et al*., 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) Water solubility: 0.00026 mg/L at 25 °C (Miller *et al*., 1985)
(e) Log K_{ow} (octanol–water): 6.90 (Sangster Research Laboratories, 2005)
(f) Henry's law constant: 0.027 Pa m^3/mol at 20 °C (ten Hulscher *et al.*, 1992)

20. Benzo[*c*]phenanthrene

20.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 195-19-7
Chem. Abstr. Name: Benzo[c]phenanthrene
IUPAC Systematic Name: Benzo[*c*]phenanthrene
Synonyms: 3,4-Benzophenanthrene; tetrahelicene

20.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) Description: Needles from alcohol
(b) Melting-point: 68 °C; 66.1 °C (Karcher *et al.*, 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998)

21. Benzo[*a*]pyrene

21.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 50-32-8
Chem. Abstr. Name: Benzo[a]pyrene
IUPAC Systematic Name: Benzo[*a*]pyrene
Synonyms: BaP; benzo[*def*]chrysene; benz[*a*]pyrene; 3,4-benz[*a*]pyrene*; 3,4-benzo-pyrene*; 6,7-benzopyrene*; 3,4-benzpyrene*; 4,5-benzpyrene*
*Alternative numbering conventions

21.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) Description: Yellowish plates, needles from benzene/methanol; crystals may be monoclinic or orthorhombic
(b) Boiling-point: 310–312 °C at 10 mm Hg
(c) Melting-point: 179–179.3 °C; 178.1 °C (Karcher *et al.*, 1985)
(d) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(e) Water solubility: 0.00162 mg/L at 25 °C (May *et al.*, 1983); 0.0038 mg/L at 25 °C (Miller *et al.*, 1985)
(f) Log K_{ow} (octanol–water): 6.35 (Sangster Research Laboratories, 2005)
(g) Henry's law constant: 0.034 Pa m^3/mol at 20 °C (ten Hulscher *et al*., 1992)

22. Benzo[*e*]pyrene

22.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 192-97-2
Chem. Abstr. Name: Benzo[e]pyrene
IUPAC Systematic Name: Benzo[*e*]pyrene
Synonyms: 1,2-Benzopyrene*; 4,5-benzopyrene; 1,2-benzpyrene*; 4,5-benzpyrene
*Alternative numbering convention

22.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) Description: Prisms or plates from benzene
(b) Melting-point: 178–179 °C; 178.7 (Karcher *et al.*, 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) Water solubility: 0.0063 mg/L at 25 °C (Pearlman *et al.*, 1984)
(e) Log K_{ow} (octanol–water): 6.44 (Sangster Research Laboratories, 2005)

23. Chrysene

23.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 218-01-9
Chem. Abstr. Name: Chrysene
IUPAC Systematic Name: Chrysene
Synonyms: Benzo[*a*]phenanthrene; 1,2-benzophenanthrene; 1,2-benzphenanthrene

23.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) *Description*: Orthorhombic bipyramidal plates from benzene
(b) *Boiling-point*: 448 °C
(c) *Melting-point*: 254°C; 253.8 °C (Karcher *et al*., 1985)
(d) *Density*: 1.274 at 20 °C relative to water at 4 °C
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(f) *Water solubility*: 0.00179 mg/L at 25 °C (May *et al*., 1983); 0.0020 mg/L at 25 °C (Miller *et al*., 1985)
(g) *Log K_{ow} (octanol–water)*: 5.79 (Miller *et al.*, 1985); 5.86 (Sangster Research Laboratories, 2005)
(h) *Henry's law constant*: 0.53 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)

24. Coronene

24.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 191-07-1
Chem. Abstr. Name: Coronene
IUPAC Systematic Name: Coronene
Synonyms: Dibenzo[*ghi,pqr*]perylene; hexabenzobenzene

24.2 *Chemical and physical properties of the pure substance*

From Lide (2005), unless otherwise specified
(a) *Description*: Yellow needles from benzene
(b) *Boiling-point*: 525 °C
(c) *Melting-point*: 437.4 °C; 439 °C (Karcher *et al*., 1988)
(d) *Density*: 1.371 at 25 °C
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).
(f) *Water solubility*: 0.00014 mg/L at 25 °C (Miller *et al.*, 1985)
(g) *Log K_{ow} (octanol–water)*: 6.50 (Sangster Research Laboratories, 2005)

25. 4*H*-Cyclopenta[*def*]chrysene

25.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 202-98-2
Chem. Abstr. Name: 4H-Cyclopenta[def]chrysene
IUPAC Systematic Name: 4*H*-Cyclopenta[*def*]chrysene
Synonyms: 4,5-Methanochrysene; 4,5-methylenechrysene

25.2 *Chemical and physical properties of the pure substance*

(a) Melting-point: 171–173 °C (Nagel *et al.*, 1977); 172.5–173.5 (Harvey *et al.*, 1991)

(b) Spectroscopy data: UV/VIS, infrared and NMR spectral data have been reported (Harvey *et al.*, 1991).

26. Cyclopenta[*cd*]pyrene

26.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 27208-37-3
Chem. Abstr. Name: Cyclopenta[cd]pyrene
IUPAC Systematic Name: Cyclopenta[*cd*]pyrene
Synonyms: Acepyrene; acepyrylene; cyclopenta[*c*,*d*]pyrene

26.2 *Chemical and physical properties of the pure substance*

(a) Melting-point: 170 °C (Karcher *et al.*, 1985)

(b) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al.*, 1985; NIST, 1998).

27. 5,6-Cyclopenteno-1,2-benzanthracene

27.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 7099-43-6
Chem. Abstr. Name: 1H-Benzo[a]cyclopent[h]anthracene, 2,3-dihydro-
IUPAC Systematic Name: 2,3-Dihydro-1*H*-benzo[*a*]cyclopent[*h*]anthracene
Synonym: 5,6-Cyclopenteno-1,2-benzanthracene

27.2 *Chemical and physical properties of the pure substance*

(a) Melting-point: 197–199 °C (Cooke, 1932)

(b) Spectroscopy data: UV/VIS spectral data have been reported (Mayneord & Roe, 1935).

28. Dibenz[*a,c*]anthracene

28.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 215-58-7
Chem. Abstr. Name: Benzo[b]triphenylene
IUPAC Systematic Name: Benzo[*b*]triphenylene

Synonyms: 2,3-Benzotriphenylene; 1,2:3,4-dibenzanthracene; dibenzo[*a*,*c*]anthracene; 1,2:3,4-dibenzoanthracene

28.2 *Chemical and physical properties of the pure substance*

(a) Description: Needles from acetic acid or alcohol (Lide, 2005)
(b) Melting-point: 205 °C (Lide, 2005); 205.6 °C (Karcher *et al*., 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) Water solubility: 0.0016 mg/L at 25 °C (Howard & Meyland, 1997)
(e) Log K_{ow} (octanol–water): 6.17 (Sangster Research Laboratories, 2005)

29. Dibenz[*a,h*]anthracene

29.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 53-70-3
Chem. Abstr. Name: Dibenz[a,h]anthracene
IUPAC Systematic Name: Dibenz[*a,h*]anthracene
Synonyms: 1,2:5,6-Benzanthracene; 1,2:5,6-dibenz[*a*]anthracene; 1,2:5,6-dibenzanthracene; dibenzo[*a*,*h*]anthracene; 1,2:5,6-dibenzoanthracene

29.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) Description: Plates or leaflets from acetic acid; crystals may be monoclinic or orthorhombic
(b) Melting-point: 266 °C; 266.6 °C (Karcher *et al.*, 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) Water solubility: 0.00050 mg/L at 25 °C (Miller *et al*., 1985)
(e) Log K_{ow} (octanol–water): 6.75 (Sangster Research Laboratories, 2005)

30. Dibenz[*a,j*]anthracene

30.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 224-41-9
Chem. Abstr. Name: Dibenz[a,j]anthracene
IUPAC Systematic Name: Dibenz[*a,j*]anthracene
Synonyms: 1,2:7,8-Dibenzanthracene; 3,4:5,6-dibenzanthracene; dibenzo-1,2,7,8-anthracene

30.2 *Chemical and physical properties of the pure substance*

(a) Description: Orange leaves or needles from benzene (Lide, 2005)
(b) Melting-point: 197.3 °C (Karcher *et al.*, 1985); 197.5 °C (Lide, 2005)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) Water solubility: 0.012 mg/L at 25 °C (Pearlman *et al*., 1984)
(e) Log K_{ow} (octanol–water): 7.11 (Sangster Research Laboratories, 2005)

31. Dibenzo[*a,e*]fluoranthene

31.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 5385-75-1
Chem. Abstr. Name: Dibenz[a,e]aceanthrylene
IUPAC Systematic Name: Dibenz[*a,e*]aceanthrylene
Synonym: 2,3,5,6-Dibenzofluoranthene

31.2 *Chemical and physical properties of the pure substance*

(a) Description: Yellow needles (recrystallized from benzene) (Buckingham, 1996)
(b) Melting-point: 232 °C (Buckingham, 1996); 232 °C (Karcher *et al.*, 1988)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).

32. 13*H*-Dibenzo[*a,g*]fluorene

32.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 207-83-0
Chem. Abstr. Name: 13H-Dibenzo[a,g]fluorene
IUPAC Systematic Name: 13H-Dibenzo[*a,g*]fluorene
Synonyms: Dibenzo[*a,g*]fluorene; 1,2,5,6-dibenzofluorene

32.2 *Chemical and physical properties of the pure substance*

(a) Melting-point: 176–178 °C (Hopkinson *et al.*, 1986); 175–175.5 °C (Harvey *et al.*, 1991)
(b) Spectroscopy data: UV/VIS and NMR spectral data have been reported (Hopkinson *et al.*, 1986; Harvey *et al.*, 1991).

33. Dibenzo[*h,rst*]pentaphene

33.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 192-47-2
Chem. Abstr. Name: Dibenzo[h,rst]pentaphene
IUPAC Systematic Name: Dibenzo[*h,rst*]pentaphene
Synonyms: Tribenzo[*a,e,i*]pyrene; 1,2:4,5:7,8-tribenzpyrene

33.2 *Chemical and physical properties of the pure substance*

(a) Melting-point: 315 °C (Blümer et al., 1976)
(b) Spectroscopy data: Infrared and mass spectral data have been reported (NIST, 1998, 2005).

34. Dibenzo[*a,e*]pyrene

34.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 192-65-4
Chem. Abstr. Name: Naphtho[1,2,3,4-def]chrysene
IUPAC Systematic Name: Naphtho[1,2,3,4-*def*]chrysene
Synonym: 1,2:4,5-Dibenzopyrene

34.2 *Chemical and physical properties of the pure substance*

(a) Description: Pale yellow needles from xylene (Lide, 2005)
(b) Melting-point: 244.4 °C (Karcher *et al*., 1985); 233.5 °C (Lide, 2005)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

35. Dibenzo[*a,h*]pyrene

35.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 189-64-0
Chem. Abstr. Name: Dibenzo[b,def]chrysene
IUPAC Systematic Name: Dibenzo[*b,def*]chrysene
Synonym: 3,4:8,9-Dibenzopyrene*
*Alternative numbering convention

35.2 *Chemical and physical properties of the pure substance*

(a) Description: Golden-yellow plates, recrystallized from xylene or trichlorobenzene (Lide, 2005)
(b) Melting-point: 317 °C (Karcher *et al.*, 1988); 315 °C (Lide, 2005)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).

36. Dibenzo[*a,i*]pyrene

36.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 189-55-9
Chem. Abstr. Name: Benzo[rst]pentaphene
IUPAC Systematic Name: Benzo[*rst*]pentaphene
Synonyms: Benzo[*rst*]pentacene; dibenzo[*b,h*]pyrene; 1,2:7,8-dibenzpyrene

36.2 *Chemical and physical properties of the pure substance*

(a) Description: Greenish yellow needles, prisms or lamellae (IARC, 1983)
(b) Melting-point: 282 °C (Karcher *et al.*, 1988); 281.5 °C (Lide, 2005)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).

37. Dibenzo[*a,l*]pyrene

37.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 191-30-0
Chem. Abstr. Name: Dibenzo[def,p]chrysene
IUPAC Systematic Name: Dibenzo[*def,p*]chrysene
Synonym: 1,2,9,10-Dibenzopyrene

37.2 *Chemical and physical properties of the pure substance*

(a) Description: Yellow plates, from ethanol–benzene (Lide, 2005)
(b) Melting-point: 162.4 °C (Karcher *et al*., 1985)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; 1988; NIST, 1998).
(d) Log K_{ow} (octanol–water): 7.71 (Sangster Research Laboratories, 2005)

38. Dibenzo[*e,l*]pyrene

38.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 192-51-8
Chem. Abstr. Name: Dibenzo[fg,op]naphthacene
IUPAC Systematic Name: Dibenzo[*fg,op*]naphthacene
Synonyms: 4,5,9,10-Dibenzopyrene; dibenzotetracene

38.2 *Chemical and physical properties of the pure substance*

(a) *Spectroscopy data*: UV/VIS (Yu & Campiglia, 2004), infrared (Weisman *et al.*, 2005), phosphorescence (Schmidt *et al.*, 1987) and mass (NIST, 1998) spectral data have been reported.

39. 1,2-Dihydroaceanthrylene

39.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 641-48-5
Chem. Abstr. Name: Aceanthrylene, 1,2-dihydro-
IUPAC Systematic Name: 1,2-Dihydroaceanthrylene
Synonym: Aceanthrene

39.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Yellow, flaky crystals (Becker *et al.*, 1985); colourless solid (Otero-Lobato *et al.*, 2005)
(b) *Melting-point*: 118–119 °C (Becker *et al.*, 1985); 112–113 °C (Olde Boerrigter *et al.*, 1989; Otero-Lobato *et al.*, 2005)
(c) *Spectroscopy data*: Proton and carbon-13 NMR and mass spectral data have been reported (Becker *et al.*, 1985; Olde Boerrigter *et al.*, 1989; Otero-Lobato *et al.*, 2005).

40. 1,4-Dimethylphenanthrene

40.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 22349-59-3
Chem. Abstr. Name: Phenanthrene, 1,4-dimethyl-
IUPAC Systematic Name: 1,4-Dimethylphenanthrene

40.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Long, white needles recrystallized from methanol (Papa *et al*., 1938); colourless needles from petroleum ether (Jung & Koreeda, 1989)
(b) *Melting-point*: 49.5–50.5 °C (Papa *et al.*, 1938); 50–51 °C (Jung & Koreeda, 1989)
(c) *Spectroscopy data*: Infrared, and proton and carbon-13 NMR spectral data have been reported (Jung & Koreeda, 1989).

41. Fluoranthene

41.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 206-44-0
Chem. Abstr. Name: Fluoranthene
IUPAC Systematic Name: Fluoranthene
Synonyms: 1,2-Benzacephthalene; 1,2-benzoacenaphthylene; benzo[*jk*]fluorene; 1,2-idryl; 1,2-(1,8-naphthalenediyl)benzene

41.2 *Chemical and physical properties of the pure substance*

From Lide (2005), unless otherwise specified
(a) *Description*: Pale yellow needles or plates from alcohol
(b) *Boiling-point*: 384 °C
(c) *Melting-point*: 110.19 °C; 108.8 °C (Karcher *et al*., 1985)
(d) *Density*: 1.252 at 0 °C relative to water at 4 °C
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(f) *Water solubility*: 0.205 mg/L at 25 °C (May *et al*., 1983); 0.26 mg/L at 25 °C (Miller *et al*., 1985)
(g) *Vapour pressure*: 0.00123 Pa at 25 °C (Sonnefeld *et al.*, 1983)
(h) *Log K_{ow} (octanol–water)*: 5.20 (Sangster Research Laboratories, 2005)
(i) *Henry's law constant*: 1.96 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)
(j) *Atmospheric OH rate constant*: ~1.8×10^{-11} cm^3/mol/s at 100 °C (Calvert *et al.*, 2002)

42. Fluorene

42.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 86-73-7
Chem. Abstr. Name: 9H-Fluorene
IUPAC Systematic Name: 9*H*-Fluorene

Synonyms: *ortho*-Biphenylenemethane; diphenylenemethane; methane, diphenylene-; 2,2′-methylenebiphenyl

42.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) *Description*: White leaflets or flakes from alcohol
(b) *Boiling-point*: 295 °C
(c) *Melting-point*: 116–117 °C; 115–116 °C (Karcher *et al*., 1988)
(d) *Density*: 1.20
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).
(f) *Water solubility*: 1.68 mg/L at 25 °C (May *et al*., 1983)
(g) *Vapour pressure*: 0.08 Pa at 25 °C (Sonnefeld *et al*., 1983)
(h) *Log K_{ow} (octanol–water)*: 4.18 (Miller *et al*., 1985); 4.18 (Sangster Research Laboratories, 2005)
(i) *Henry's law constant*: 9.81 Pa m^3/mol at 25 °C (Bamford *et al.*, 1999)
(j) *Atmospheric OH rate constant*: 1.4×10^{-11} cm^3/ mol/s at 25 °C (Calvert *et al*., 2002)

43. Indeno[1,2,3-*cd*]pyrene

43.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 193-39-5
Chem. Abstr. Name: Indeno[1,2,3-cd]pyrene
IUPAC Systematic Name: Indeno[1,2,3-*cd*]pyrene
Synonyms: 1,10-(*ortho*-Phenylene)pyrene; 1,10-(1,2-phenylene)pyrene

43.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Yellow plates or needles (recrystallized from light petroleum solution) showing a greenish yellow fluorescence; yellow cristals from cyclohexane (IARC, 1983; Lide, 2005)
(b) *Melting-point*: 163.6 °C (Karcher *et al.*, 1985)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) *Water solubility*: 0.00019 mg/L at 25 °C (Pearlman *et al*., 1984)
(e) *Henry's law constant*: 0.029 Pa m^3/mol at 20 °C (ten Hulscher *et al*., 1992)

44. 1-Methylchrysene

44.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 3351-28-8
Chem. Abstr. Name: Chrysene, 1-methyl-
IUPAC Systematic Name: 1-Methylchrysene

44.2 *Chemical and physical properties of the pure substance*

(a) Description: Leaflets recrystallized from benzene, hexane or toluene (Lide, 1992)
(b) Melting-point: 254.4 °C (Karcher *et al.*, 1985); 256–257 °C (Lide, 1992)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

45. 2-Methylchrysene

45.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 3351-32-4
Chem. Abstr. Name: Chrysene, 2-methyl-
IUPAC Systematic Name: 2-Methylchrysene

45.2 *Chemical and physical properties of the pure substance*

(a) Description: Leaflets recrystallized from benzene–alcohol (Lide, 1992)
(b) Melting-point: 230.2 °C (Karcher *et al.*, 1985); 229–230 °C (Lide, 1992)
(c) Spectroscopy data: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

46. 3-Methylchrysene

46.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 3351-31-3
Chem. Abstr. Name: Chrysene, 3-methyl-
IUPAC Systematic Name: 3-Methylchrysene

46.2 *Chemical and physical properties of the pure substance*

(a) Description: Leaflets recrystallized from benzene–petroleum ether (Lide, 2005)
(b) Melting-point: 171.9 °C (Karcher *et al.*, 1985); 173.3 °C (Lide, 2005)

(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).

47. 4-Methylchrysene

47.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 3351-30-2
Chem. Abstr. Name: Chrysene, 4-methyl-
IUPAC Systematic Name: 4-Methylchrysene

47.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Highly fluorescent plates recrystallized from benzene–ethanol (Buckingham, 1996)
(b) *Melting-point*: 150.6 °C (Karcher *et al.*, 1985); 151–152 °C (Buckingham, 1996)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported spectra (Karcher *et al*., 1985; NIST, 1998).

48. 5-Methylchrysene

48.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 3697-24-3
Chem. Abstr. Name: Chrysene, 5-methyl-
IUPAC Systematic Name: 5-Methylchrysene

48.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Needles recrystallized from benzene–ethanol with a brilliant bluish violet fluorescence in UV light (Buckingham, 1996)
(b) *Melting-point*: 117.1 °C (Karcher *et al.*, 1985); 118–119 °C (Buckingham, 1996)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) *Water solubility*: 0.062 mg/L at 27 °C (Howard & Meylan, 1997)

49. 6-Methylchrysene

49.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 1705-85-7
Chem. Abstr. Name: Chrysene, 6-methyl-

IUPAC Systematic Name: 6-Methylchrysene

49.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Fluorescent needles recrystallized from ethyl acetate–ethanol (Buckingham, 1996)
(b) *Melting-point*: 160–161 °C (Karcher *et al.*, 1985); 161–162 °C (Buckingham, 1996)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(d) *Water solubility*: 0.065 mg/L at 27 °C (Howard & Meylan, 1997)

50. 2-Methylfluoranthene

50.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 33543-31-6
Chem. Abstr. Name: Fluoranthene, 2-methyl-
IUPAC Systematic Name: 2-Methylfluoranthene
Note: Previously 3-methylfluoranthene

50.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Ill-defined needles after crystallization from methanol (Tucker, 1952)
(b) *Melting-point*: 79–81 °C (Tucker, 1952)
(c) *Spectroscopy data*: Mass spectral data have been reported (NIST, 1998).

51. 3-Methylfluoranthene

51.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 1706-01-0
Chem. Abstr. Name: Fluoranthene, 3-methyl-
IUPAC Systematic Name: 3-Methylfluoranthene
Note: Previously 4-methylfluoranthene

51.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Pale green sword blades recrystallized from ethanol (Stubbs & Tucker, 1950)
(b) *Melting-point*: 65–66 °C (Stubbs & Tucker, 1950); 66–68 °C (Karcher *et al.*, 1991)

(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1991).

52. 1-Methylphenanthrene

52.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 832-69-9
Chem. Abstr. Name: Phenanthrene, 1-methyl-
IUPAC Systematic Name: 1-Methylphenanthrene

52.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Leaves or plates recrystallized from diluted alcohol (Lide, 2005)
(b) *Melting-point*: 123 °C (Lide, 2005; Karcher *et al.*, 1991)
(c) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1991; NIST, 1998).
(d) *Water solubility*: 0.269 mg/L at 25 °C (May *et al.*, 1983)
(e) *Log K_{ow} (octanol–water)*: 5.08 (Sangster Research Laboratories, 2005)
(f) *Henry's law constant*: 5.00 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)
(g) *Atmospheric OH rate constant*: 2.88×10^{-11} cm^3/mol/s at 25 °C (Lee *et al.*, 2003)

53. Naphtho[1,2-*b*]fluoranthene

53.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 111189-32-3
Chem. Abstr. Name: Indeno[1,2,3-hi]chrysene
IUPAC Systematic Name: Indeno[1,2,3-*hi*]chrysene

53.2 *Chemical and physical properties of the pure substance*

(a) *Description*: Long greenish yellow needles from ethyl acetate/hexane (Cho & Harvey, 1987a)
(b) *Melting-point*: 188–189 °C (Cho & Harvey, 1987a)
(c) *Spectroscopy data*: UV/VIS, and proton and carbon-13 NMR spectral data have been reported (Cho & Harvey, 1987a,b).

54. Naphtho[2,1-*a*]fluoranthene

54.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 203-20-3

Chem. Abstr. Name: Dibenz[a,j]aceanthrylene
IUPAC Systematic Name: Dibenz[*a,j*]aceanthrylene
Synonym: 15,16-Benzodehydrocholanthrene

54.2 *Chemical and physical properties of the pure substance*

(a) Description: Bright yellow, cottony needles recrystallized from benzene (Fieser & Seligman, 1935)
(b) Melting-point: 181–181.3 °C (Fieser & Seligman, 1935); 180 °C (Ray & Harvey, 1982; Cho & Harvey, 1987a)
(c) Spectroscopy data: NMR spectral data have been reported (Ray & Harvey, 1982; Cho & Harvey, 1987a).

55. Naphtho[2,3-*e*]pyrene

55.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 193-09-9
Chem. Abstr. Name: Dibenzo[de,qr]naphthacene
IUPAC Systematic Name: Dibenzo[*de,qr*]naphthacene
Synonyms: Dibenzo[*de,qr*]tetracene; naphtho-(2′,3′:4,5)-pyrene

55.2 *Chemical and physical properties of the pure substance*

(a) Spectroscopy data: UV/VIS and fluorescence spectral data have been reported (Schmidt *et al.*, 1987; NIST, 2005).

56. Perylene

56.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 198-55-0
Chem. Abstr. Name: Perylene
IUPAC Systematic Name: Perylene
Synonyms: Dibenz[*de,kl*]anthracene; *peri*-dinaphthalene; α-perylene

56.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) Description: Yellow to colourless crystals from toluene
(b) Boiling-point: Sublimes at 350–400 °C
(c) Melting-point: 273–274 °C; 277.5 °C (Karcher *et al.*, 1988)
(d) Density: 1.35

(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).
(f) *Water solubility*: 0.00040 mg/L at 25 °C (Miller *et al.*, 1985)
(g) *Vapour pressure*: 5.85×10^{-7} Pa at 25 °C (Howard & Meylan, 1997)
(h) *Log K_{ow} (octanol–water)*: 6.25 (Sangster Research Laboratories, 2005)

57. Phenanthrene

57.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 85-01-8
Chem. Abstr. Name: Phenanthrene
IUPAC Systematic Name: Phenanthrene*
Synonym: Phenanthrin
*Numbering exception

57.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) *Description*: Monoclinic plates from alcohol
(b) *Boiling-point*: 340 °C
(c) *Melting-point*: 100 °C; 100.5 °C (Karcher *et al.*, 1985); 99.24 °C (Lide, 2005)
(d) *Density*: 1.179 at 25 °C; 0.9800 relative to water at 4 °C (Lide, 2005)
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(f) *Water solubility*: 0.977 mg/L at 25 °C (May *et al.*, 1983); 1.18 mg/L at 25 °C (Miller *et al.*, 1985)
(g) *Vapour pressure*: 0.016 Pa at 25 °C (Sonnefeld *et al.*, 1983)
(h) *Log K_{ow} (octanol–water)*: 4.57 (Miller *et al.*, 1985); 4.52 (Sangster Research Laboratories, 2005)
(i) *Henry's law constant*: 4.29 Pa m^3/mol at 25 °C (Bamford *et al.*, 1999)
(j) *Atmospheric OH rate constant*: 1.8×10^{-11} cm^3/mol/s at 25 °C (Calvert *et al.*, 2002)

58. Picene

58.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 213-46-7
Chem. Abstr. Name: Picene
IUPAC Systematic Name: Picene
Synonyms: Benzo[*a*]chrysene; dibenzo[*a*,*i*]phenanthrene; 1,2;7,8-dibenzophenanthrene

58.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) *Description*: Fluorescent plates from ethyl acetate
(b) *Boiling-point*: 518–520 °C
(c) *Melting-point*: 366–367 °C; 364 °C (Karcher *et al*., 1988)
(d) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).
(e) *Water solubility*: 0.00431 mg/L at 20 °C (Howard & Meylan, 1997)
(f) *Log K_{ow} (octanol–water)*: 7.11 (Sangster Research Laboratories, 2005)

59. Pyrene

59.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 129-00-0
Chem. Abstr. Name: Pyrene
IUPAC Systematic Name: Pyrene
Synonyms: Benzo[*def*]phenanthrene; β-pyrene

59.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified
(a) *Description*: Monoclinic prismatic tablets from alcohol
(b) *Boiling-point*: 404 °C
(c) *Melting-point*: 156 °C; 150.4 °C (Karcher *et al*., 1985); 150.6 °C (Lide, 2005)
(d) *Density*: 1.271 at 23 °C; 1.271 at 23 °C relative to water at 4 °C (Lide, 2005)
(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1985; NIST, 1998).
(f) *Water solubility*: 0.130 mg/L at 25 °C (May *et al*., 1983); 0.135 mg/L (Miller *et al*., 1985)
(g) *Vapour pressure*: 0.00060 Pa at 25 °C (Sonnefeld *et al*., 1983)
(h) *Log K_{ow} (octanol–water)*: 5.18 (Miller *et al*., 1985); 5.00 (Sangster Research Laboratories, 2005)
(i) *Henry's law constant*: 1.71 Pa m^3/mol at 25 °C (Bamford *et al*., 1999)

60. Triphenylene

60.1 *Nomenclature*

Chem. Abstr. Services Reg. No.: 217-59-4
Chem. Abstr. Name: Triphenylene
IUPAC Systematic Name: Triphenylene

Synonyms: Benzo[*l*]phenanthrene; 9,10-benzophenanthrene; 9,10-benzphenanthrene; 1,2,3,4-dibenznaphthalene; isochrysene

60.2 *Chemical and physical properties of the pure substance*

From O'Neil (2006), unless otherwise specified

(a) *Description*: Long needles recrystallized from alcohol or chloroform

(b) *Boiling-point*: 425 °C

(c) *Melting-point*: 199 °C; 199 ^{o}C (Karcher *et al.*, 1988)

(d) *Density*: 1.302

(e) *Spectroscopy data*: UV/VIS, infrared, fluorescence, mass and NMR spectral data have been reported (Karcher *et al*., 1988; NIST, 1998).

(f) *Water solubility*: 0.00632 mg/L at 25 °C (May *et al.*, 1983)

(g) *Log K_{ow} (octanol–water)*: 5.49 (Sangster Research Laboratories, 2005)

Table 1. Identification of the polycyclic aromatic hydrocarbons covered in this monograph

Common name (name used in this volume)	IUPAC name	CAS Registry No.	Molecular formula	Relative molecular mass
Acenaphthene	Acenaphthene	83-32-9	$C_{12}H_{10}$	154.2
Acepyrene	3,4-Dihydrocyclopenta[*cd*]pyrene	25732-74-5	$C_{18}H_{12}$	228.3
Anthanthrene	Dibenzo[*def,mno*]chrysene	191-26-4	$C_{22}H_{12}$	276.3
Anthracene	Anthracene	120-12-7	$C_{14}H_{10}$	178.2
11*H*-Benz[*b,c*]aceanthrylene	11*H*-Benz[*b,c*]aceanthrylene	202-94-8	$C_{19}H_{12}$	240.3
Benz[*j*]aceanthrylene	Benz[*j*]aceanthrylene	202-33-5	$C_{20}H_{12}$	252.3
Benz[*l*]aceanthrylene	Benz[*l*]aceanthrylene	211-91-6	$C_{20}H_{12}$	252.3
Benz[*a*]anthracene	Benz[*a*]anthracene	56-55-3	$C_{18}H_{12}$	228.3
Benzo[*b*]chrysene	Benzo[*b*]chrysene	214-17-5	$C_{22}H_{14}$	278.4
Benzo[*g*]chrysene	Benzo[*g*]chrysene	196-78-1	$C_{22}H_{14}$	278.4
Benzo[*a*]fluoranthene	Benz[*a*]aceanthrylene	203-33-8	$C_{20}H_{12}$	252.3
Benzo[*b*]fluoranthene	Benz[*e*]acephenanthrylene	205-99-2	$C_{20}H_{12}$	252.3
Benzo[*ghi*]fluoranthene	Benzo[*ghi*]fluoranthene	203-12-3	$C_{18}H_{10}$	226.3
Benzo[*j*]fluoranthene	Benzo[*j*]fluoranthene	205-82-3	$C_{20}H_{12}$	252.3
Benzo[*k*]fluoranthene	Benzo[*k*]fluoranthene	207-08-9	$C_{20}H_{12}$	252.3
Benzo[*a*]fluorene	11*H*-Benzo[*a*]fluorene	238-84-6	$C_{17}H_{12}$	216.3
Benzo[*b*]fluorene	11*H*-Benzo[*b*]fluorene	243-17-4	$C_{17}H_{12}$	216.3
Benzo[*c*]fluorene	7*H*-Benzo[*c*]fluorene	205-12-9	$C_{17}H_{12}$	216.3
Benzo[*ghi*]perylene	Benzo[*ghi*]perylene	191-24-2	$C_{22}H_{12}$	276.3
Benzo[*c*]phenanthrene	Benzo[*c*]phenanthrene	195-19-7	$C_{18}H_{12}$	228.3
Benzo[*a*]pyrene	Benzo[*a*]pyrene	50-32-8	$C_{20}H_{12}$	252.3
Benzo[*e*]pyrene	Benzo[*e*]pyrene	192-97-2	$C_{20}H_{12}$	252.3
Chrysene	Chrysene	218-01-9	$C_{18}H_{12}$	228.3
Coronene	Coronene	191-07-1	$C_{24}H_{12}$	300.4
4*H*-Cyclopenta[*def*]chrysene	4*H*-Cyclopenta[*def*]chrysene	202-98-2	$C_{19}H_{12}$	240.3
Cyclopenta[*cd*]pyrene	Cyclopenta[*cd*]pyrene	27208-37-3	$C_{18}H_{10}$	226.3
5,6-Cyclopenteno-1,2-benzanthracene	2,3-Dihydro-1*H*-benzo[*a*]cyclopent[*h*]anthracene	7099-43-6	$C_{21}H_{16}$	268.4
Dibenz[*a,c*]anthracene	Benzo[*b*]triphenylene	215-58-7	$C_{22}H_{14}$	278.4
Dibenz[*a,h*]anthracene	Dibenz[*a,h*]anthracene	53-70-3	$C_{22}H_{14}$	278.4

Table 1 (Contd)

Common name (name used in this volume)	IUPAC name	CAS Registry No.	Molecular formula	Relative molecular mass
Dibenz[*a,j*]anthracene	Dibenz[*a,j*]anthracene	224-41-9	$C_{22}H_{14}$	278.4
Dibenzo[*a,e*]fluoranthene	Dibenz[*a,e*]aceanthrylene	5385-75-1	$C_{24}H_{14}$	302.4
13*H*-Dibenzo[*a,g*]fluorene	13*H*-Dibenzo[*a,g*]fluorene	207-83-0	$C_{21}H_{14}$	266.3
Dibenzo[*h,rst*]pentaphene	Dibenzo[*h,rst*]pentaphene	192-47-2	$C_{28}H_{16}$	352.4
Dibenzo[*a,e*]pyrene	Naphtho[1,2,3,4-*def*]chrysene	192-65-4	$C_{24}H_{14}$	302.4
Dibenzo[*a,h*]pyrene	Dibenzo[*b,def*]chrysene	189-64-0	$C_{24}H_{14}$	302.4
Dibenzo[*a,i*]pyrene	Benzo[*rst*]pentaphene	189-55-9	$C_{24}H_{14}$	302.4
Dibenzo[*a,l*]pyrene	Dibenzo[*def,p*]chrysene	191-30-0	$C_{24}H_{14}$	302.4
Dibenzo[*e,l*]pyrene	Dibenzo[*fg,op*]naphthacene	192-51-8	$C_{24}H_{14}$	302.4
1,2-Dihydroaceanthrylene	1,2-Dihydroaceanthrylene	641-48-5	$C_{16}H_{12}$	204.3
1,4-Dimethylphenanthrene	1,4-Dimethylphenanthrene	22349-59-3	$C_{16}H_{14}$	206.3
Fluoranthene	Fluoranthene	206-44-0	$C_{16}H_{10}$	202.3
Fluorene	9*H*-Fluorene	86-73-7	$C_{13}H_{10}$	166.2
Indeno[1,2,3-*cd*]pyrene	Indeno[1,2,3-cd]pyrene	193-39-5	$C_{22}H_{12}$	276.3
1-Methylchrysene	1-Methylchrysene	3351-28-8	$C_{19}H_{14}$	242.3
2-Methylchrysene	2-Methylchrysene	3351-32-4	$C_{19}H_{14}$	242.3
3-Methylchrysene	3-Methylchrysene	3351-31-3	$C_{19}H_{14}$	242.3
4-Methylchrysene	4-Methylchrysene	3351-30-2	$C_{19}H_{14}$	242.3
5-Methylchrysene	5-Methylchrysene	3697-24-3	$C_{19}H_{14}$	242.3
6-Methylchrysene	6-Methylchrysene	1705-85-7	$C_{19}H_{14}$	242.3
2-Methylfluoranthene	2-Methylfluoranthene	33543-31-6	$C_{17}H_{12}$	216.3
3-Methylfluoranthene	3-Methylfluoranthene	1706-01-0	$C_{17}H_{12}$	216.3
1-Methylphenanthrene	1-Methylphenanthrene	832-69-9	$C_{15}H_{12}$	192.3
Naphtho[1,2-*b*]fluoranthene	Indeno[1,2,3-*hi*]chrysene	111189-32-3	$C_{24}H_{14}$	302.4
Naphtho[2,1-*a*]fluoranthene	Dibenz[*a,j*]aceanthrylene	203-20-3	$C_{24}H_{14}$	302.4
Naphtho[2,3-*e*]pyrene	Dibenzo[*de,qr*]naphthacene	193-09-9	$C_{24}H_{14}$	302.4
Perylene	Perylene	198-55-0	$C_{20}H_{12}$	252.3

Table 1 (Contd)

Common name (name used in this volume)	IUPAC name	CAS Registry No.	Molecular formula	Relative molecular mass
Phenanthrene	Phenanthrene	85-01-8	$C_{14}H_{10}$	178.2
Picene	Picene	213-46-7	$C_{22}H_{14}$	278.4
Pyrene	Pyrene	129-00-0	$C_{16}H_{10}$	202.3
Triphenylene	Triphenylene	217-59-4	$C_{18}H_{12}$	228.3

Compiled from IUPAC (1979), Chemical Abstract Services (1978)

Table 2. Selected physical and chemical properties of the polycyclic aromatic compounds covered in this monograph[a]

Compound	Melting-point (°C)	Vapour pressure (Pa at 25 °C)	*n*-Octanol:water partition coefficient (log K_{ow})	Solubility in water at 25 °C[d] (mg/L)	Henry's law constant at 25 °C (Pa•m^3/mol)
Acenaphthene	95	0.29	3.92	3.9	18.5
Acepyrene	133–134	–	–	–	–
Anthanthrene	264	–	7.04	–	–
Anthracene	216.4	8.0×10^{-4}	4.5	0.0436	5.64
11*H*-Benz[*b*,*c*]aceanthrylene	123	–	–	–	–
Benz[*j*]aceanthrylene	170–171	–	–	–	–
Benz[*l*]aceanthrylene	157–158	–	–	–	–
Benz[*a*]anthracene	160.7	2.8×10^{-5}	5.91	0.0090	1.22
Benzo[*b*]chrysene	294	–	7.11	–	–
Benzo[*g*]chrysene	116	–	–	–	–
Benzo[*a*]fluoranthene	146.3	–	–	–	–
Benzo[*b*]fluoranthene	168.3	–	5.78	0.0015	0.051
Benzo[ghi]fluoranthene	128.4	–	6.63	–	–
Benzo[*j*]fluoranthene	165.4	–	–	0.0025	–
Benzo[*k*]fluoranthene	215.7	–	6.11	0.0008	0.044
Benzo[*a*]fluorene	189–190	–	5.40	0.045	2.70
Benzo[*b*]fluorene	213.5	–	5.75	0.002	–
Benzo[*c*]fluorene	126.5	–	–	–	–
Benzo[*ghi*]perylene	278.3	–	6.90	0.00026	0.027 (20 °C)
Benzo[*c*]phenanthrene	66.1	–	–	–	–
Benzo[*a*]pyrene	178.1	–	6.35	0.00162; 0.0038	0.034
Benzo[*e*]pyrene	178.7	–	6.44	0.0063	–
Chrysene	253.8	–	5.86	0.00179	0.53
Coronene	439	–	6.50	0.00014	–
4*H*-Cyclopenta[*def*]chrysene	171–173	–	–	–	–
Cyclopenta[*cd*]pyrene	170	–	–	–	–
5,6-Cyclopenteno-1,2-benzanthracene	197–199	–	–	–	–

Table 2 (Contd)

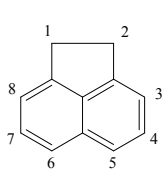
Compound	Melting-point (°C)	Vapour pressure (Pa at 25 °C)	*n*-Octanol:water partition coefficient (log K_{ow})	Solubility in water at 25 °C[d] (mg/L)	Henry's law constant at 25 °C (Pa•m^3/mol)
Dibenz[*a*,*c*]anthracene	205.6	–	6.17	0.0016	–
Dibenz[*a*,*h*]anthracene	266.6	–	6.75	0.00050	–
Dibenz[*a*,*j*]anthracene	197.3	–	7.11	0.012	–
Dibenzo[*a*,*e*]fluoranthene	232	–	–	–	–
13*H*-Dibenzo[*a*,*g*]fluorene	176–178	–	–	–	–
Dibenzo[*h*,*rst*]pentaphene	315	–	–	–	–
Dibenzo[*a*,*e*]pyrene	244.4	–	–	–	–
Dibenzo[*a*,*h*]pyrene	317	–	–	–	–
Dibenzo[*a*,*i*]pyrene	282	–	–	–	–
Dibenzo[*a*,*l*]pyrene	162.4	–	7.71	–	–
Dibenzo[*e*,*l*]pyrene	–	–	–	–	–
1,2-Dihydroaceanthrylene	118–119	–	–	–	–
1,4-Dimethylphenanthrene	50–51	–	–	–	-
Fluoranthene	108.8	0.00123	5.20	0.205; 0.26	1.96
Fluorene	115–116	0.08	4.18	1.68	9.81
Indeno[1,2,3-*cd*]pyrene	163.6	–	–	0.00019	0.029 (20 °C)
1-Methylchrysene	254.4	–	–	–	–
2-Methylchrysene	230.2	–	–	–	–
3-Methylchrysene	171.9	–	–	–	–
4-Methylchrysene	150.6	–	–	–	–
5-Methylchrysene	117.1	–	–	0.062 (27 °C)	–
6-Methylchrysene	160–161	–	–	0.065 (27 °C)	–
2-Methylfluoranthene	79–81	–	–	–	–
3-Methylfluoranthene	65–66	–	–	–	–
1-Methylphenanthrene	123	–	5.08	0.269	5.00
Naphtho[1,2-*b*]fluoranthene	188–189	–	–	–	–

Table 2 (Contd)

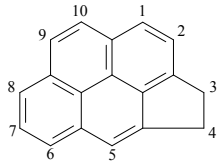
Compound	Melting-point (°C)	Vapour pressure (Pa at 25 °C)	*n*-Octanol:water partition coefficient (log K_{ow})	Solubility in water at 25 °C[d] (mg/L)	Henry's law constant at 25 °C (Pa•m^3/mol)
Naphtho[2,1-*a*]fluoranthene	180	–	–	–	–
Naphtho[2,3-*e*]pyrene	–	–	–	–	–
Perylene	277.5	–	6.25	0.0004	–
Phenanthrene	100.5	0.016	4.52	0.977; 1.18	4.29
Picene	364	–	7.11	0.00431	–
Pyrene	150.4	0.00060	5.00	0.130; 0.135	1.71
Triphenylene	199	–	5.49	0.00632	–

[a] For the original references that contain measurement details, refer to the text.
– , not available

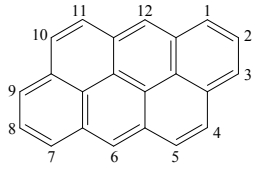
Figure 1. Structural formulae of polycyclic aromatic hydrocarbons covered in this monograph



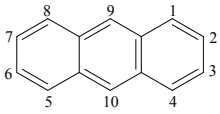
Acenaphthene



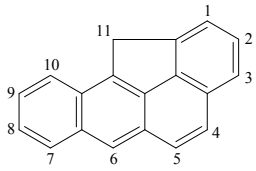
Acepyrene



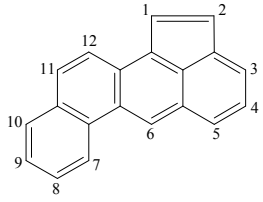
Anthanthrene



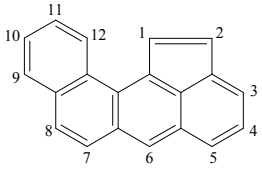
Anthracene



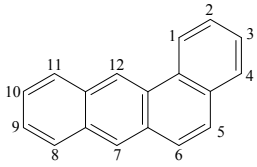
11*H*-Benz[*bc*]aceanthrylene



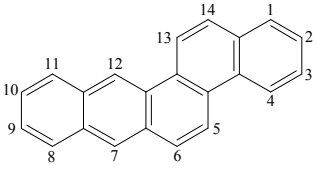
Benz[*j*]aceanthrylene



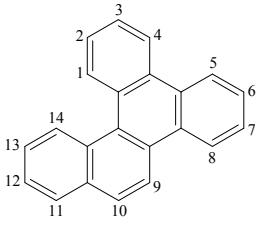
Benz[*l*]aceanthrylene



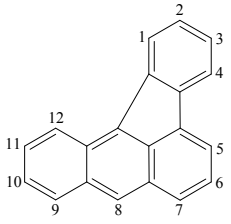
Benz[*a*]anthracene



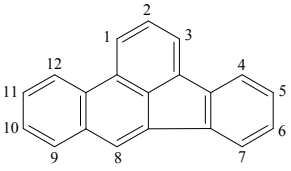
Benzo[*b*]chrysene



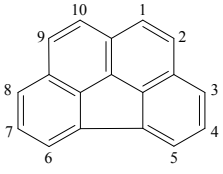
Benzo[*g*]chrysene



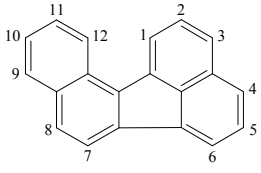
Benzo[*a*]fluoranthene



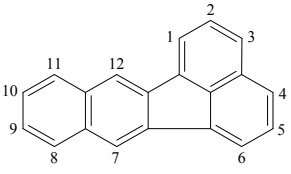
Benzo[*b*]fluoranthene



Benzo[*ghi*]fluoranthene

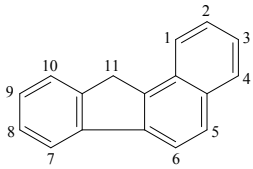


Benzo[*j*]fluoranthene

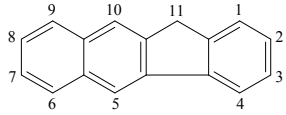


Benzo[*k*]fluoranthene

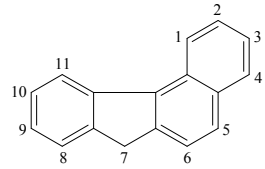
Figure 1 (contd)



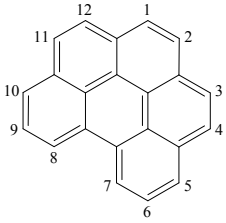
Benzo[*a*]fluorene



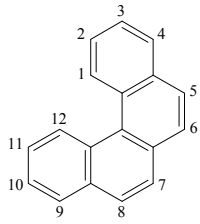
Benzo[*b*]fluorene



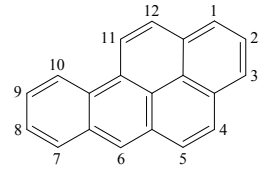
Benzo[*c*]fluorene



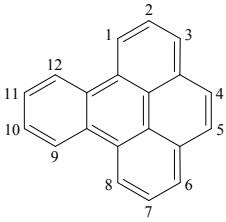
Benzo[*ghi*]perylene



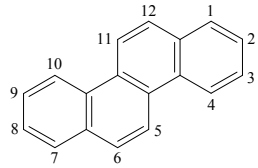
Benzo[*c*]phenanthrene



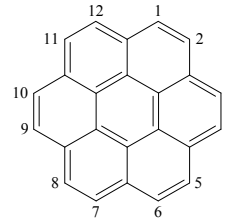
Benzo[*a*]pyrene



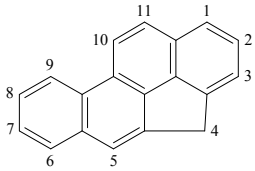
Benzo[*e*]pyrene



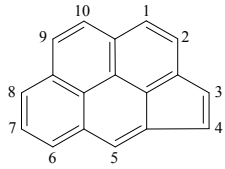
Chrysene



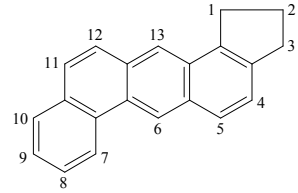
Coronene



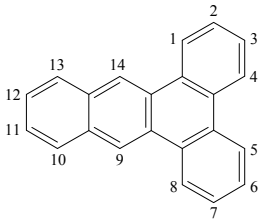
4*H*-Cyclopenta[*def*]chrysene



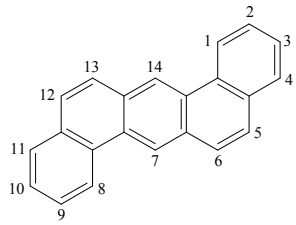
Cyclopenta[*cd*]pyrene



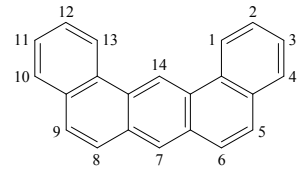
5,6-Cyclopenteno-1,2-benzanthracene



Dibenz[*a*,c]anthracene

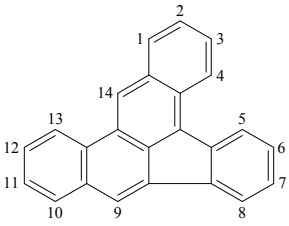


Dibenz[*a,h*]anthracene

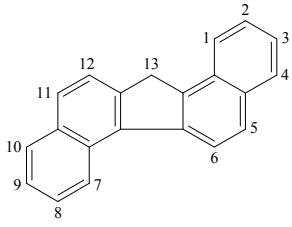


Dibenz[*a,j*]anthracene

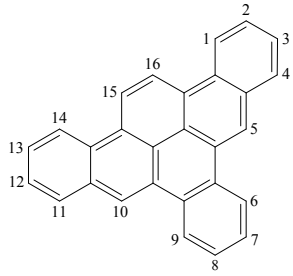
Figure 1 (contd)



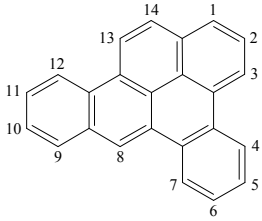
Dibenzo[*a,e*]fluoranthene



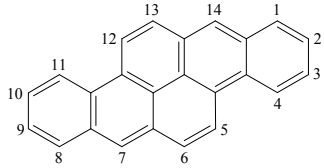
13*H*-Dibenzo[*a,g*]fluorene



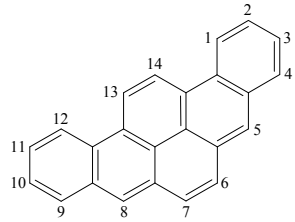
Dibenzo[*h,rst*]pentaphene



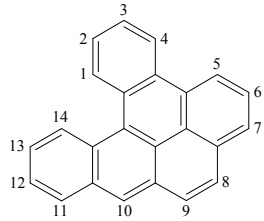
Dibenzo[*a,e*]pyrene



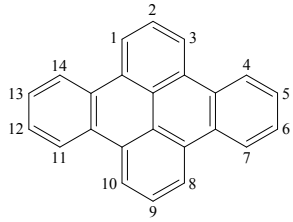
Dibenzo[*a,h*]pyrene



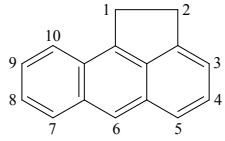
Dibenzo[*a,i*]pyrene



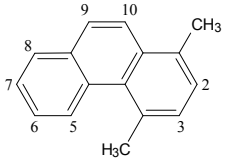
Dibenzo[*a,l*]pyrene



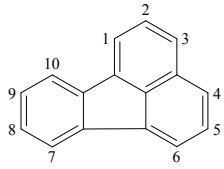
Dibenzo[*e,l*]pyrene



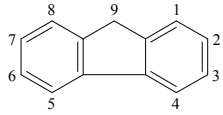
1,2-Dihydroaceanthrylene



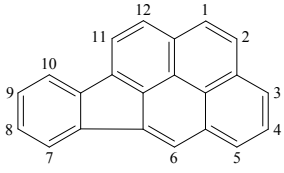
1,4-Dimethylphenanthrene



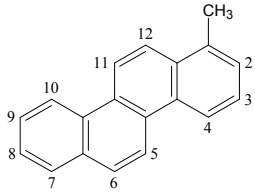
Fluoranthene



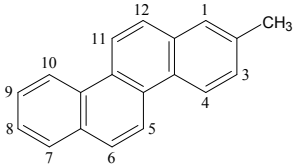
Fluorene



Indeno[1,2,3-*cd*]pyrene

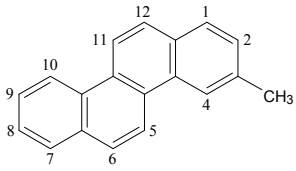


1-Methylchrysene

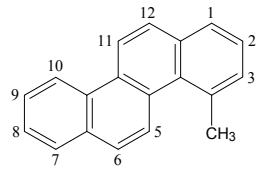


2-Methylchrysene

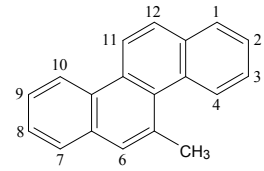
Figure 1 (contd)



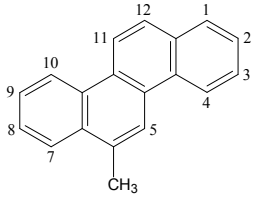
3-Methylchrysene



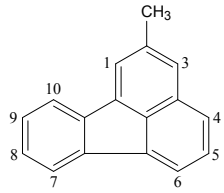
4-Methylchrysene



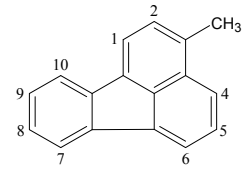
5-Methylchrysene



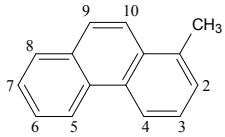
6-Methylchrysene



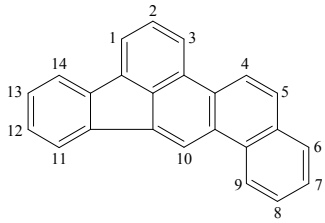
2-Methylfluoranthene



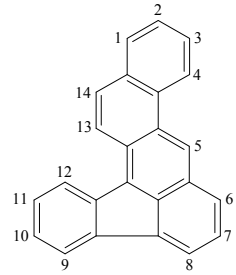
3-Methylfluoranthene



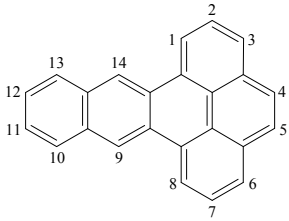
1-Methylphenanthrene



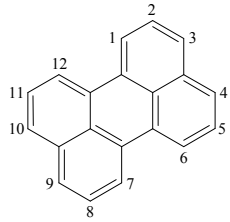
Naphtho[1,2-*b*]fluoranthene



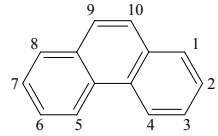
Naphtho[2,1,-*a*]fluoranthene



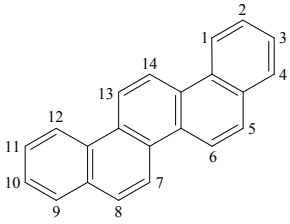
Naphtho[2,3,-*e*]pyrene



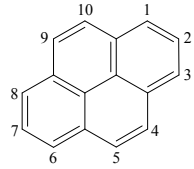
Perylene



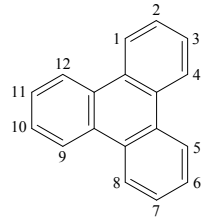
Phenanthrene



Picene



Pyrene



Triphenylene

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