

TABLE 4.1 Dipole moments of molecules, bonds, and molecular groups (in Debye units:
 $1 \text{ D} = 3.336 \times 10^{-30} \text{ C m}$)^a

<i>Molecules</i>					
Alkanes	0 ^b	H ₂ O			1.85
C ₆ H ₆ (benzene)	0	CH ₃ OH, C ₂ H ₅ OH			1.7
CCl ₄	0	Hexanol, octanol			1.7
CO ₂	0	C ₆ H ₁₁ OH (cyclohexanol)			1.7
CO	0.11	CH ₃ COOH (acetic acid)			1.7
CHCl ₃ (chloroform)	1.06	C ₂ H ₄ O (ethylene oxide)			1.9
HCl	1.08	CH ₃ COCH ₃ (acetone)			2.9
NH ₃	1.47	HCONH ₂ (formamide)			3.7
SO ₂	1.62	C ₆ H ₅ OH (phenol)			1.5
CH ₃ Cl	1.87	C ₆ H ₅ NH ₂ (aniline)			1.5
NaCl	8.5	C ₆ H ₅ Cl (chlorobenzene)			1.8
CsCl	10.4	C ₆ H ₅ NO ₂ (nitrobenzene)			4.2
<i>Bond moments</i>					
C—H ⁺	0.4	C—C	0	C ⁺ —Cl	1.5–1.7
N—H ⁺	1.31	C=C	0	N ⁺ —O	0.3
O—H ⁺	1.51	C ⁺ —N	0.22	C ⁺ =O	2.3–2.7
F—H ⁺	1.94	C ⁺ —O	0.74	N ⁺ =O	2.0
<i>Group moments</i>					
C— ⁺ OH	1.65	C— ⁺ CH ₃	0.4	C— ⁺ COOH	1.7
C— ⁺ NH ₂	1.2–1.5	C ⁺ —NO ₂	3.1–3.8	C— ⁺ OCH ₃	1.3

^a Data compiled from Wesson (1948), Smyth (1955), Davies (1965) and Landolt-Börnstein (1982).

^b Depends on conformation (e.g., cyclopropane has a dipole moment).