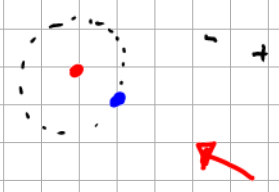


Von der wackel Kraft?

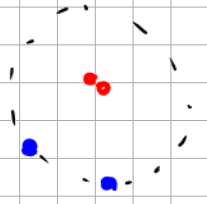
asymmetrische Verteilung von e^-

Wasserstoff: $1p; 1e^-$
(+) (-)

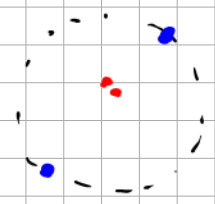
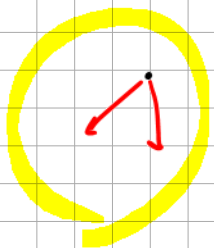


Coulomb: Anziehung von Ladung
 Abstoßung
 (+- resp. -+)
 (++) resp. --)

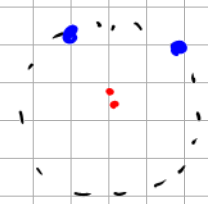
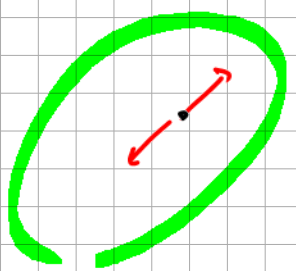
Aktion $2p; 2e^-$



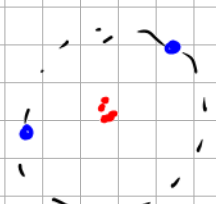
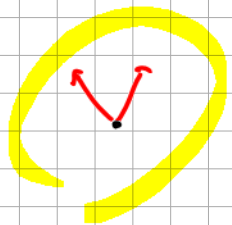
a)



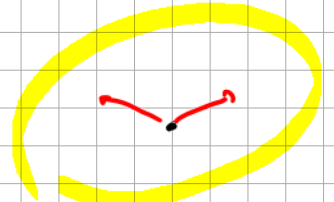
b)



c)



d)



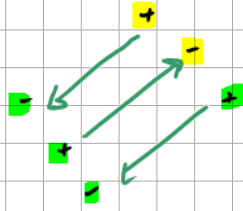
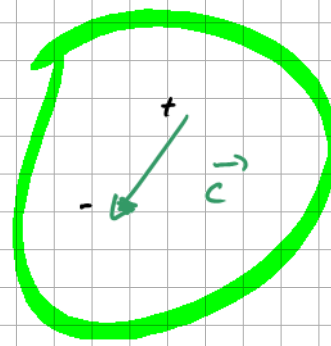
Vektoren ("Kräfte")
 heben sich auf

b: selten
 a, c, d: häufig (Vektoren heben sich nicht auf
 → asymmetrische Verteilung
 → polare ("Dipol")

a)



$$\vec{a} + \vec{b} = \vec{c}$$



ZTK

Frage 6, Rangliste

- 1) Ion-Dipol
- 2) H-Bridgen
- 3) Dipol-Dipol
- 4) VdW

HF / H₂

H- \overline{F}

H-H

	HF	H ₂
Ion-Dipol	x	x
H-Bridgen	✓	x
Dipol-Dipol	✓	x
VdW	✓	✓
	(10e ⁻)	(2e ⁻)

H- \overline{F} ...H- \overline{F}

H-H (nicht polar)

H- \overline{F} (polar)
 δ^+ δ^-



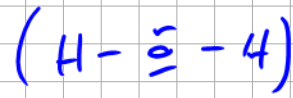
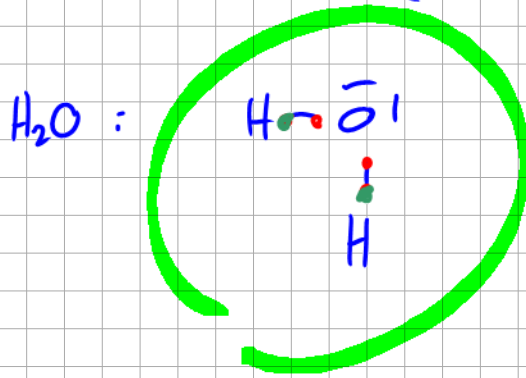
$$VdW(HF) > VdW(H_2)$$

$$ZTK(HF) > ZTK(H_2)$$

$$\Rightarrow Smp(HF) > Smp(H_2)$$

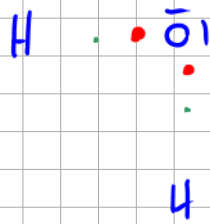
3) .. polares Molekül ("EN")

PSE: Vermögen, Bindungs-e anzuweisen



EN(O) : 3.5

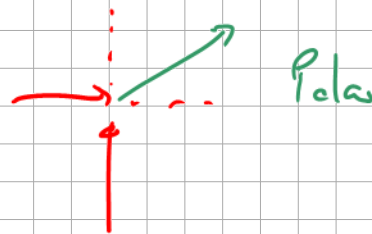
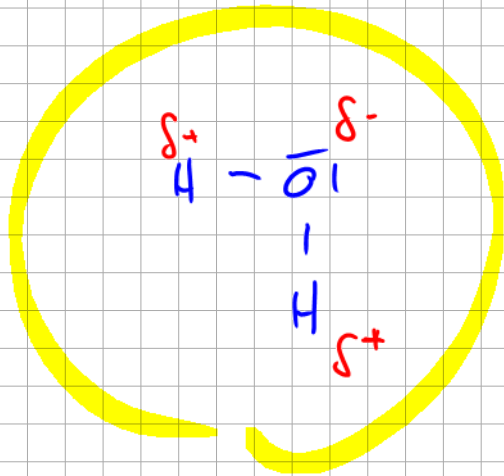
EN(H) : 2.2



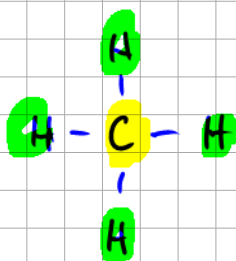
Teilweise gehören die e dem O

δ^+ : Teilladung (pos.)

δ^- : .. (neg.)

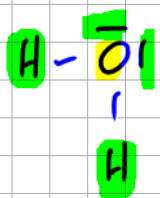


Winkelfrage... siehe Video



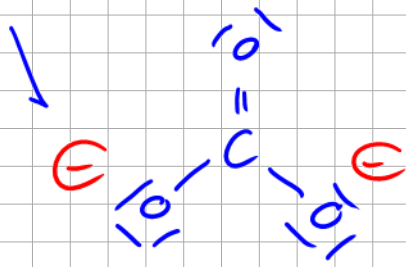
CH₄ \neq HCH = 110°

4 Nachbarn



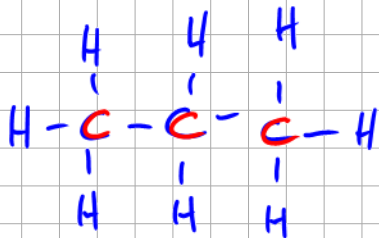
H₂O \neq HOH = 110°

• CO_3^{2-} (→ Formelladung)



5) Atome ... (!) volle Schale erwünscht / stabil

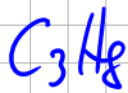
8) cc-Ketten



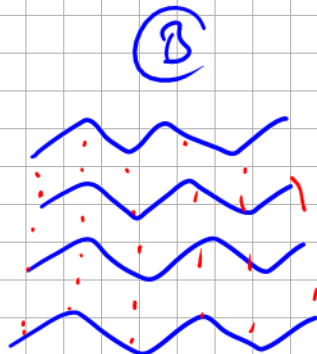
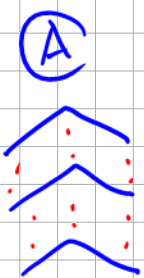
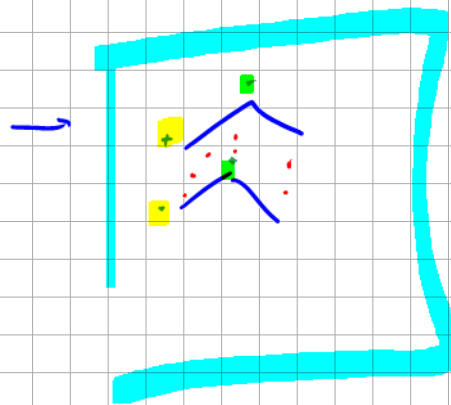
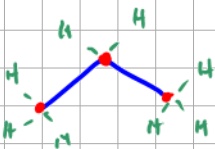
polar / unpol polar ?

$$EN(\text{H}) \sim EN(\text{C})$$

⇒ d.h. C-H-Bindung ist nicht polar

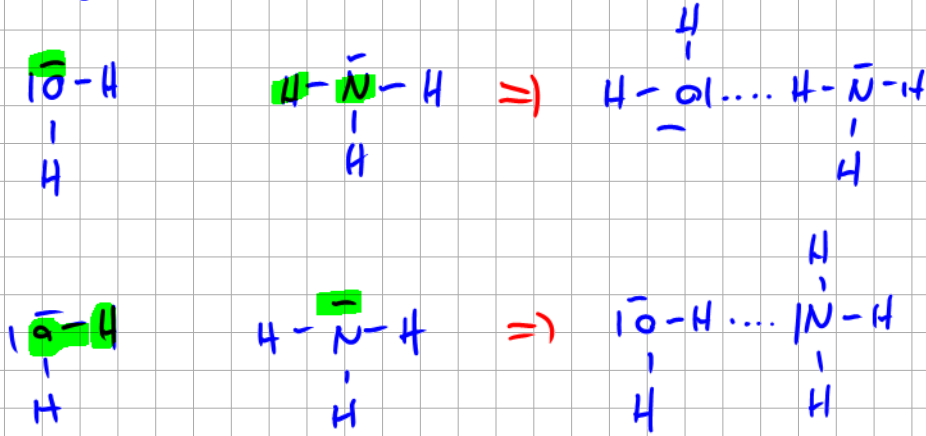


→ das ganze Molekül ist nicht polar



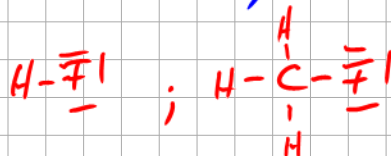
$$v_{\text{dW}}(\text{A}) < v_{\text{dW}}(\text{B}) \Rightarrow \text{Viskosität}(\text{A}) < \text{Viskosität}(\text{B})$$

• Zeichne H-Brücken zwischen Wasser + NH₃

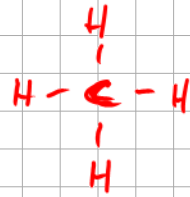


• Zeichne zwei beliebige, neutrale Moleküle, welche (Zustaten: C, H, F)

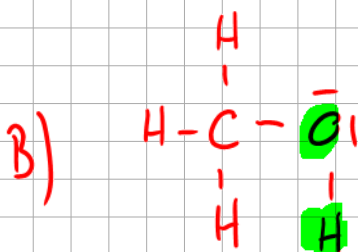
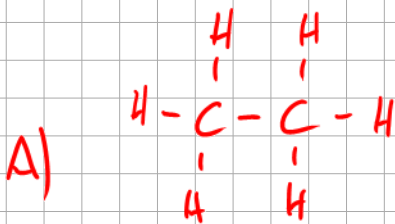
a) polar



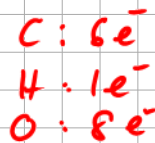
b) nicht polar sind

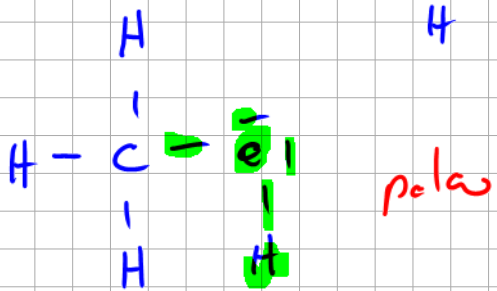
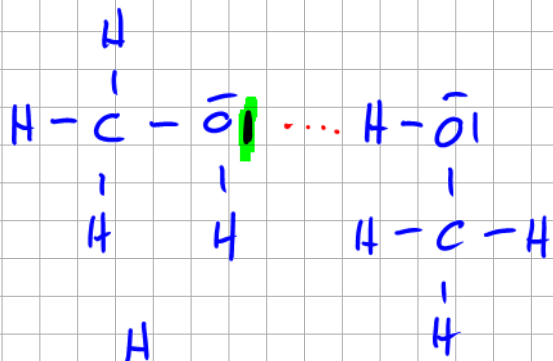


• C₂H₆ resp. CH₃OH Moleküle zeichnen, Siedepunkt



	A	B
Ion-Dipol	x	x
H-Brücken	x	✓
Dipol-Dipol	x	✓
VdW	✓	✓
	(18e ⁻)	(18e ⁻)





$$S_{\text{np}}(\text{B}) > S_{\text{np}}(\text{A})$$