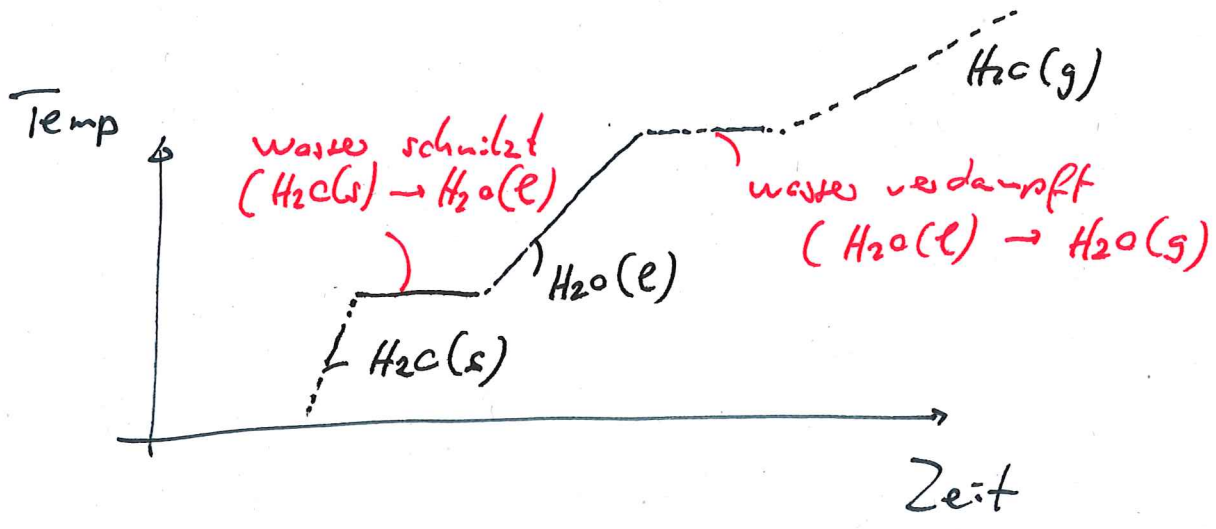


ZMK

①

"Experiment" Eis erhitzen, Temperaturverlauf?



ZMK ↔ Physikalische Eigenschaften
 einer Stoffe
 (z.B. Schmelzpunkt (Siedepunkt/
 Zähflüssig (Viskosität)
 Oberflächenspannung ...)

DNA

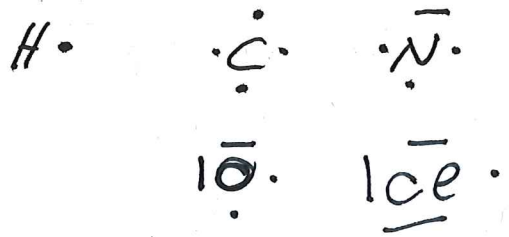


.. halten die "Sprossen" zusammen
 → ZMK!

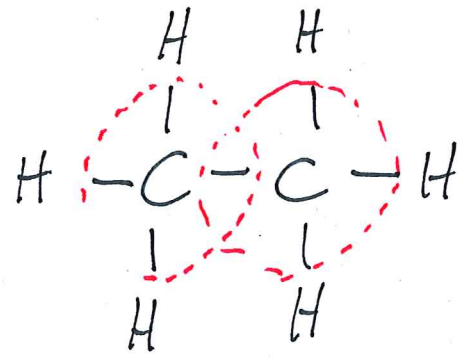
- 2 PK →
- Dipol - Dipol
 - Wasserstoff - Brücke
 - VdW

Moleküle zeichnen, Rep.

Lewisformel / Struktur der Atome



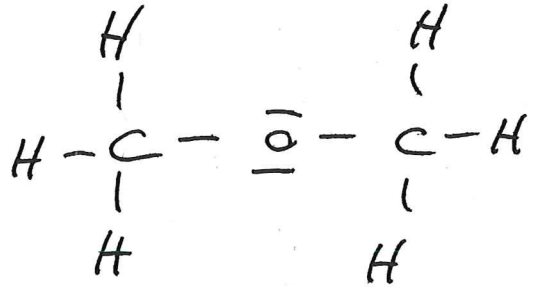
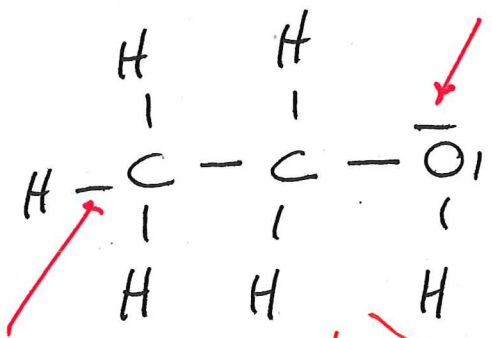
C_2H_6



nicht polar

nicht bindendes Elektronenpaar

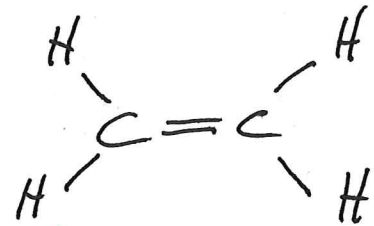
C_2H_6O



bindendes Elektronenpaar

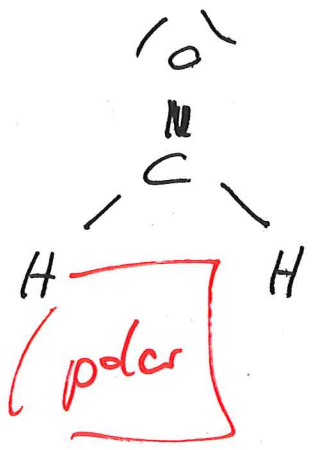
polar

C_2H_4

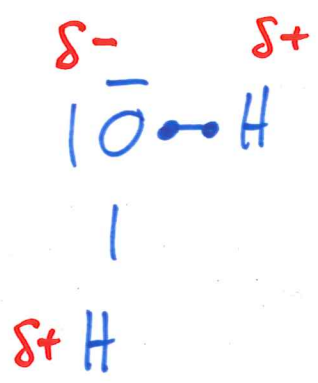


nicht polar

CH_2O

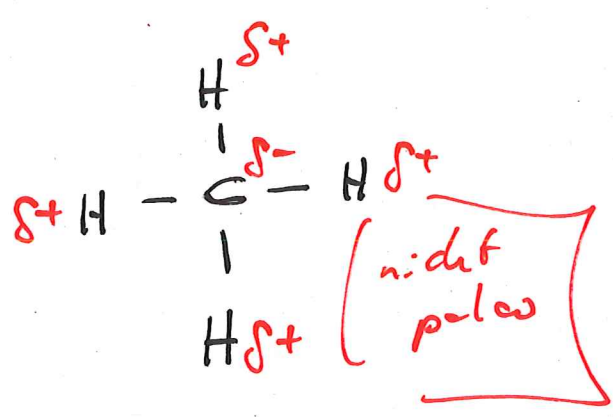
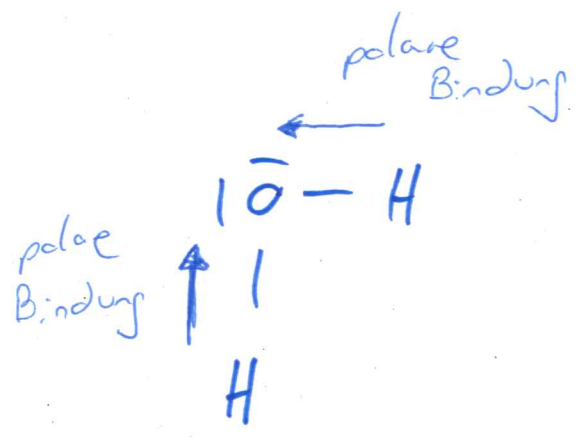


polar

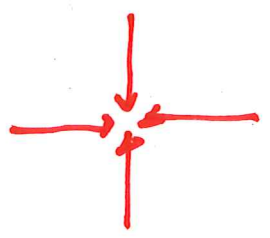


$EN(O) = 3.5$
 $EN(H) = 2.2$

Teilladung / Partialladung
 δ^+ , δ^-

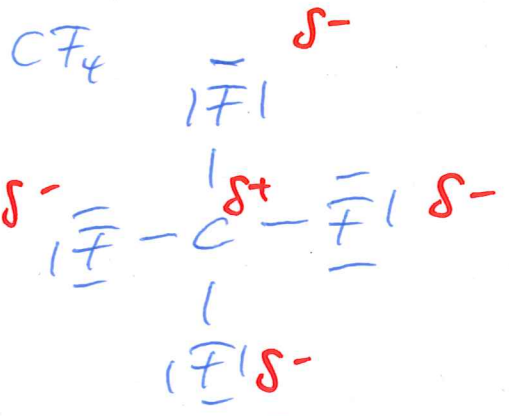


$EN(H) = 2.2$
 $EN(C) = 2.5$

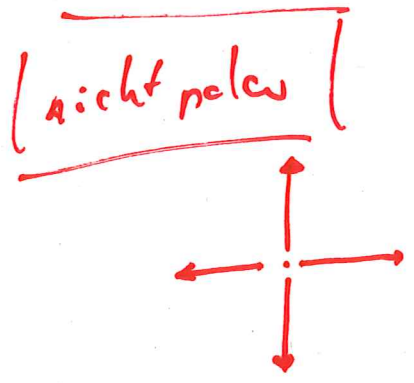


keine Resultierende, die Ladungsvektoren heben sich auf
 (→ = 0)

→ Molekül nicht polar
 (hat keinen Dipol)

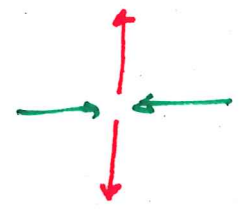
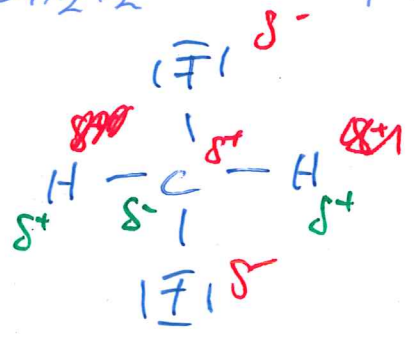


EN(F) = 4.1
EN(C) = 2.5

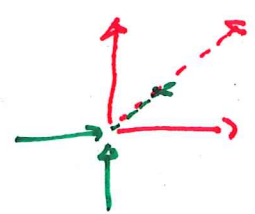
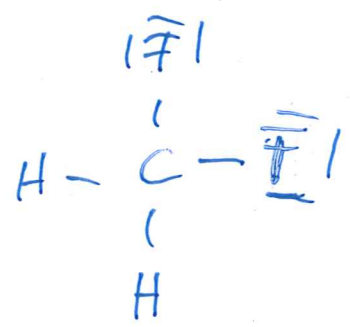


Vektoren heben sich,
keine Resultierende,
→ Molekül nicht polar/
hat keine Dipol

CH₂F₂ polar / nicht polar ?

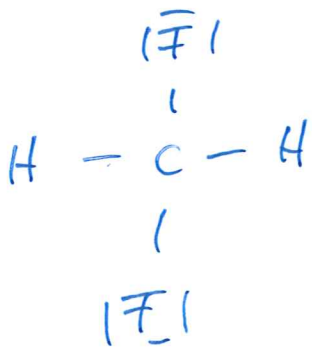


kein Dipol
nicht polar ?



Dipol vorhanden
polar !

EN(H) = 2.2
EN(C) = 2.6
EN(F) = 4.0

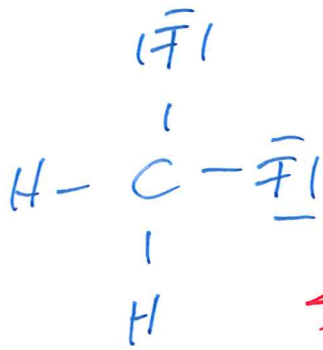
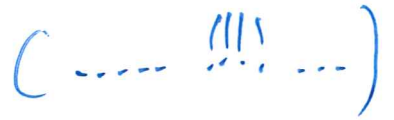


~~F C F~~
 = 110°



5a

acht poles

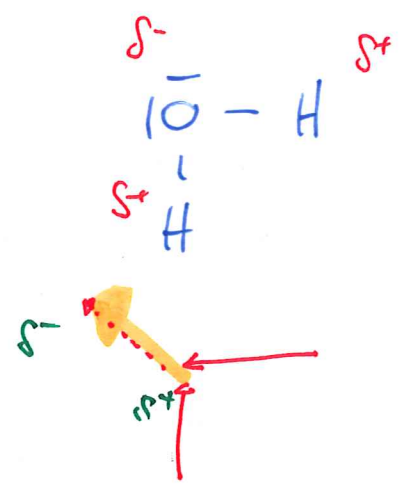
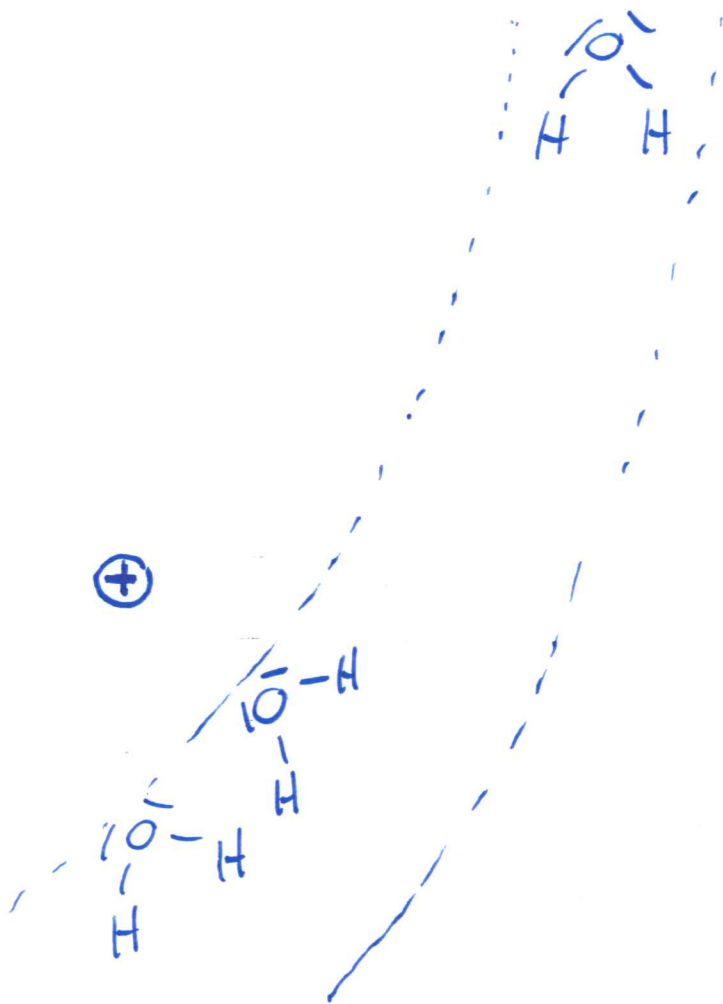


~~F C F~~
 = 110°

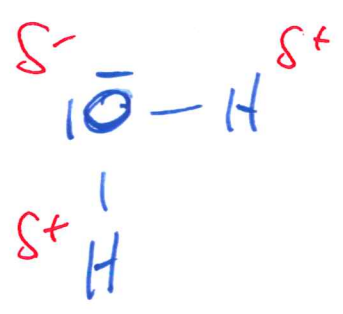
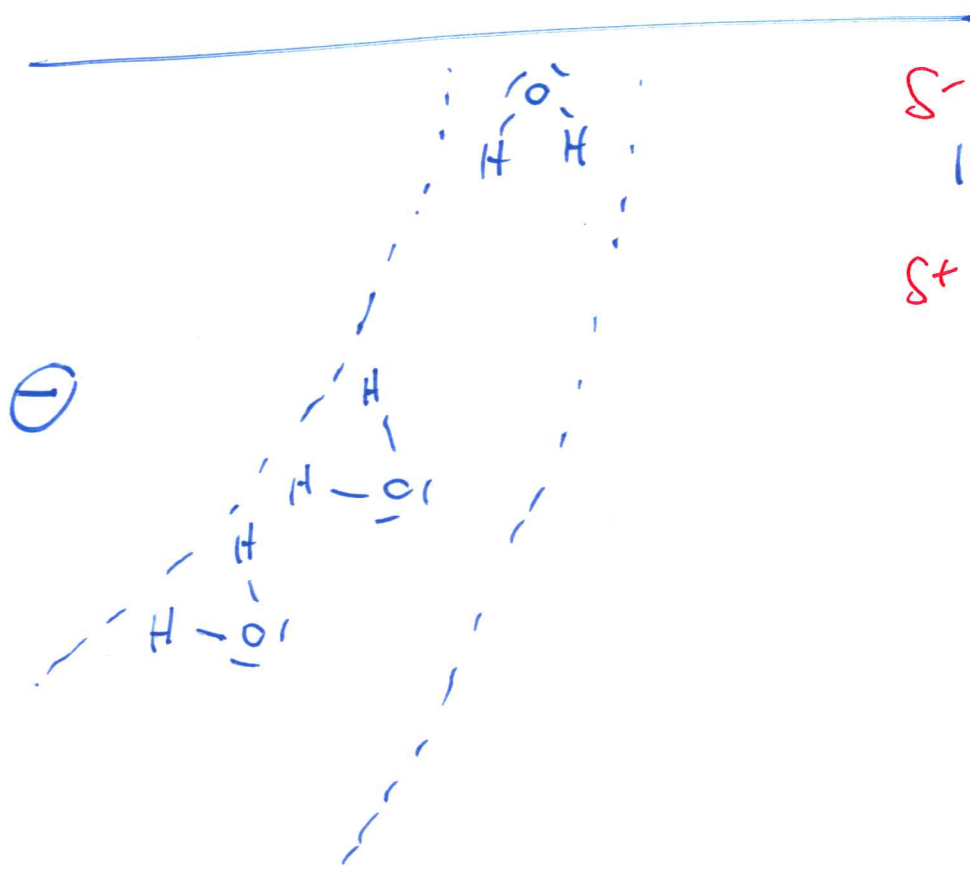


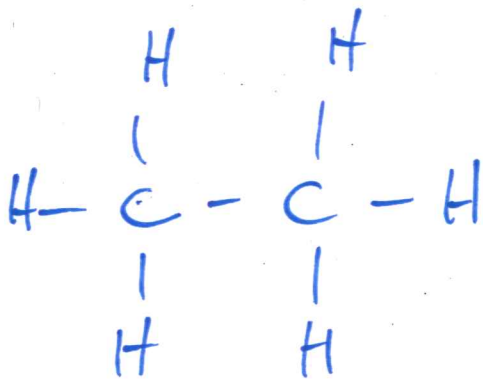
poles \checkmark

⑥



Wasser ist polar,
hat ein Dipol

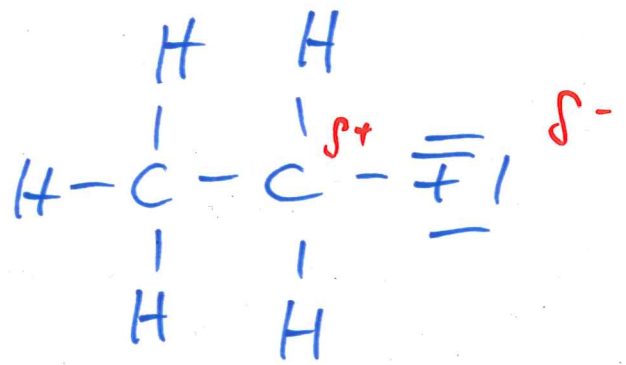




(A)

~80°C

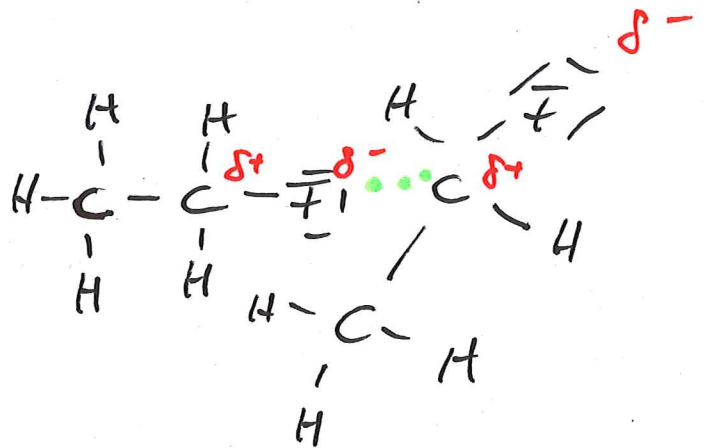
wicht molas



(B)

~20°C

polars!



Dipol - Dipol - Ww

Siedepunkt(A) < Siedepunkt(B)

Siedepunkt Wasser: ? \rightarrow 100°C

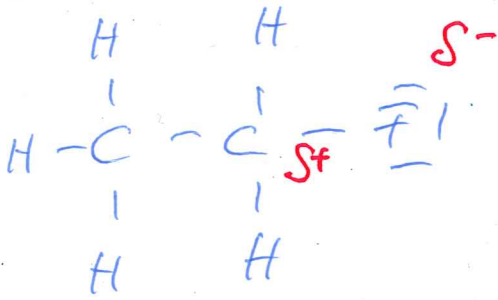
8

H: -253°C

O: -183°C

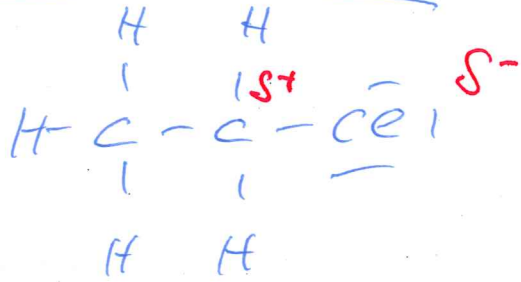
H₂O \rightarrow -689°C

21



(A)

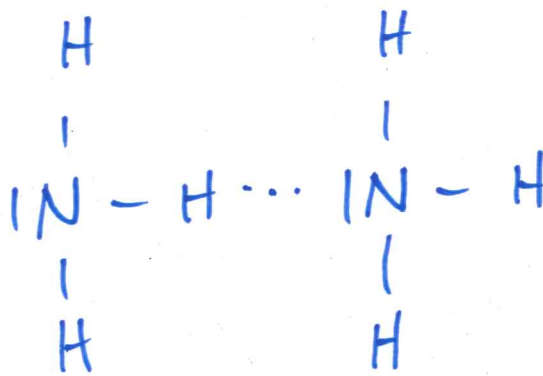
$\Delta EN: 1.4$



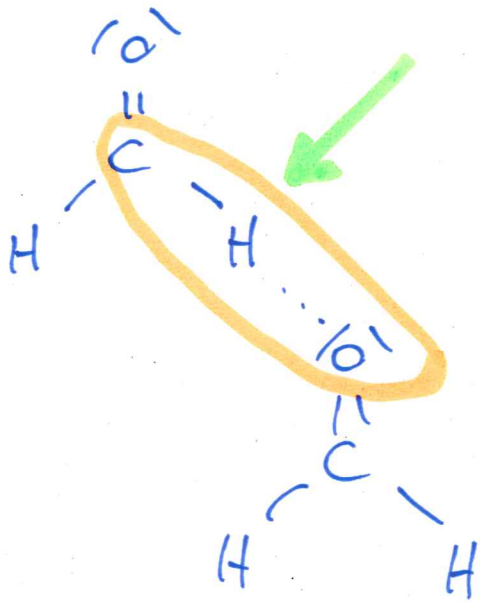
(B)

$\Delta EN: 0.6$

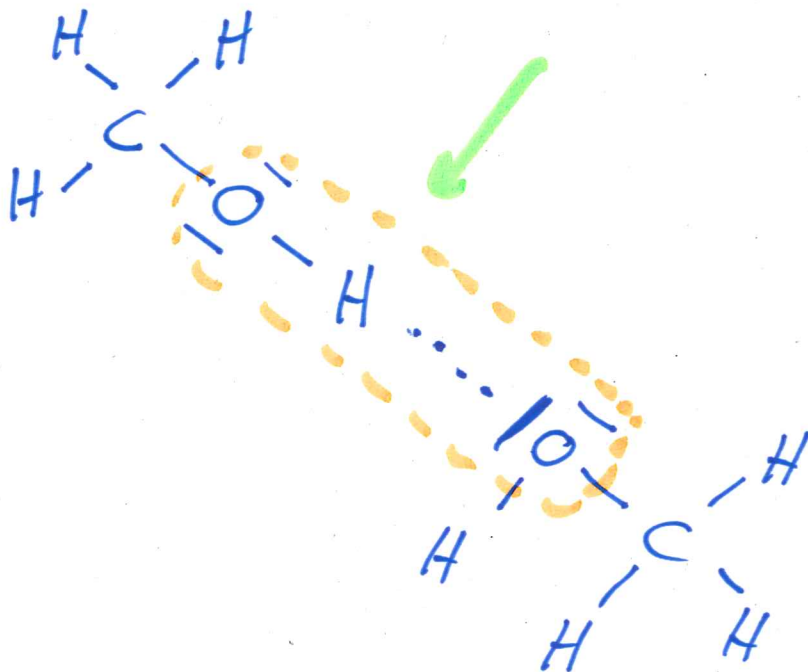
Siedepunkt (A) $>$ Siedepunkt (B)

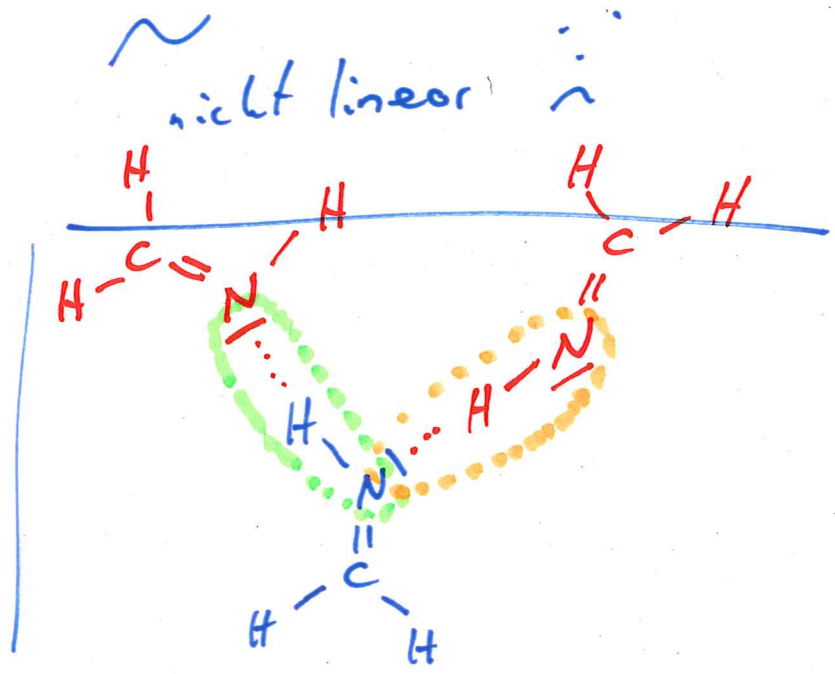
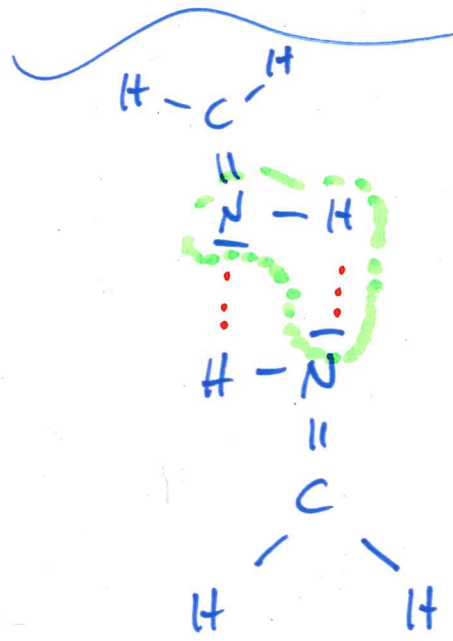
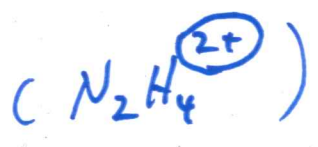
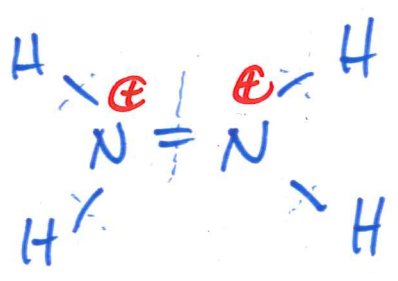
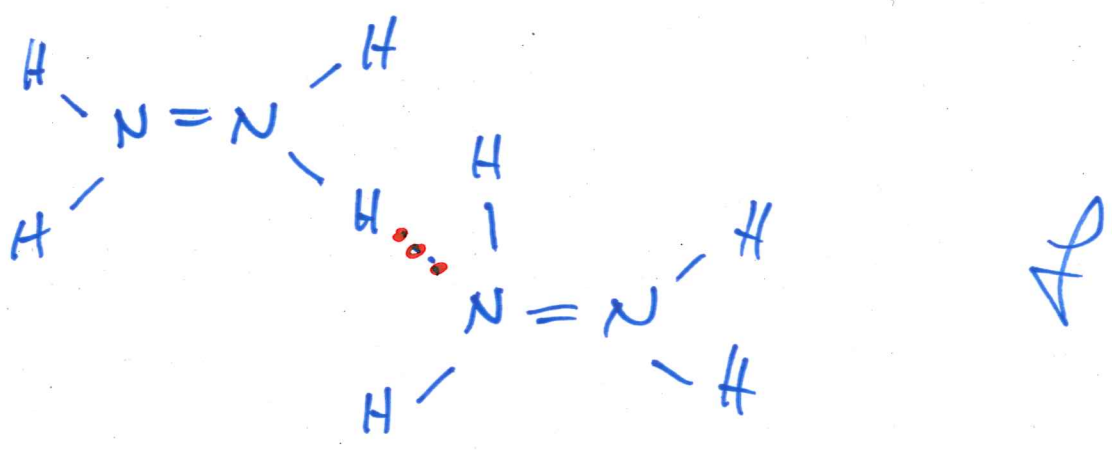


9

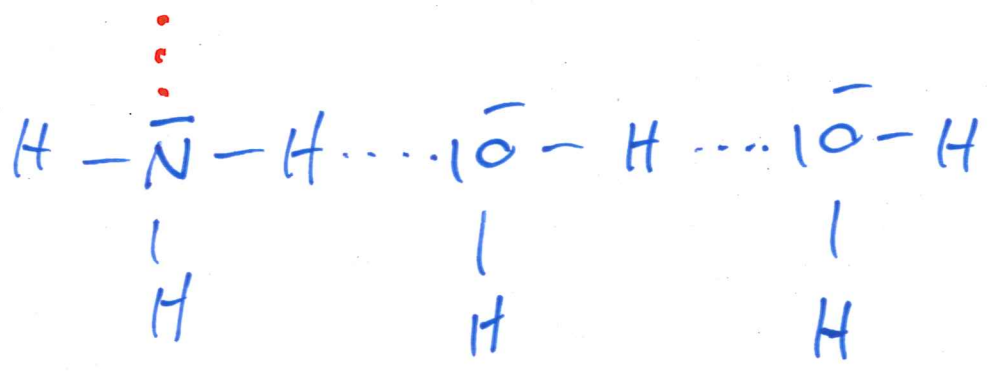
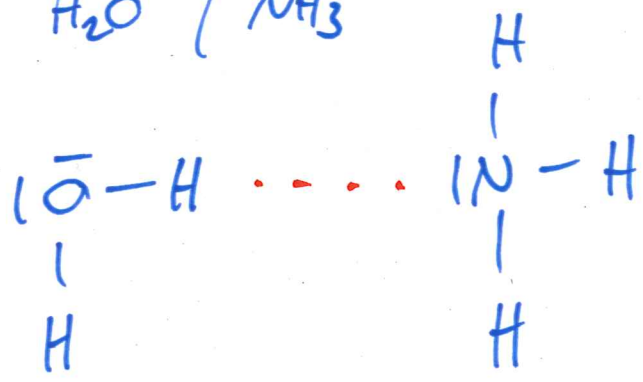


?



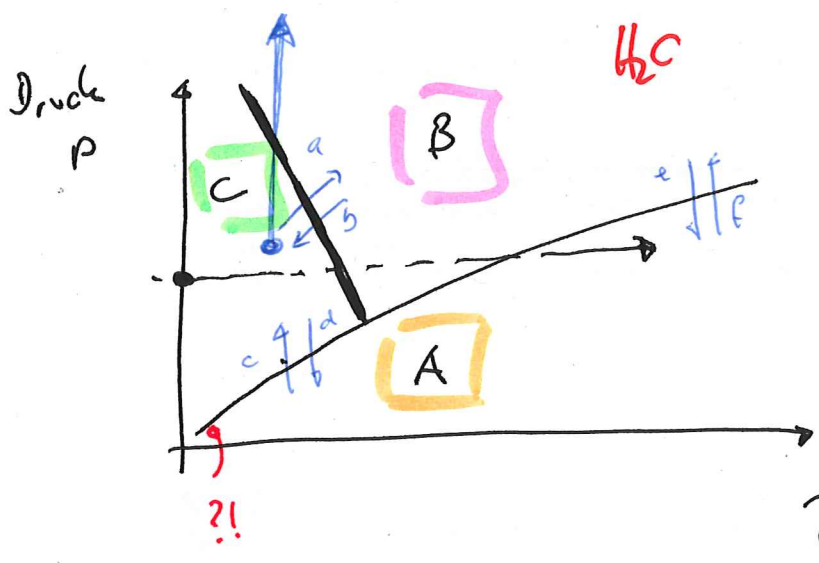


H₂O (NH₃)

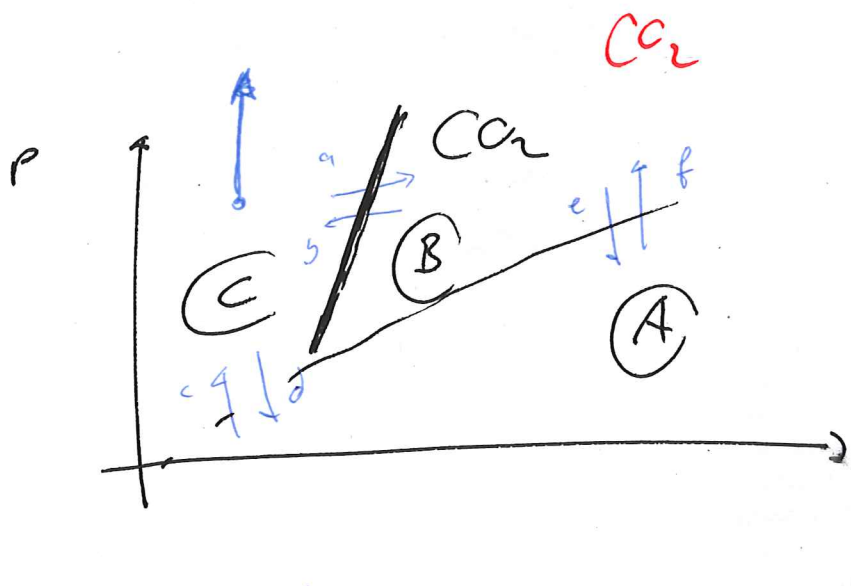


Ergänzung

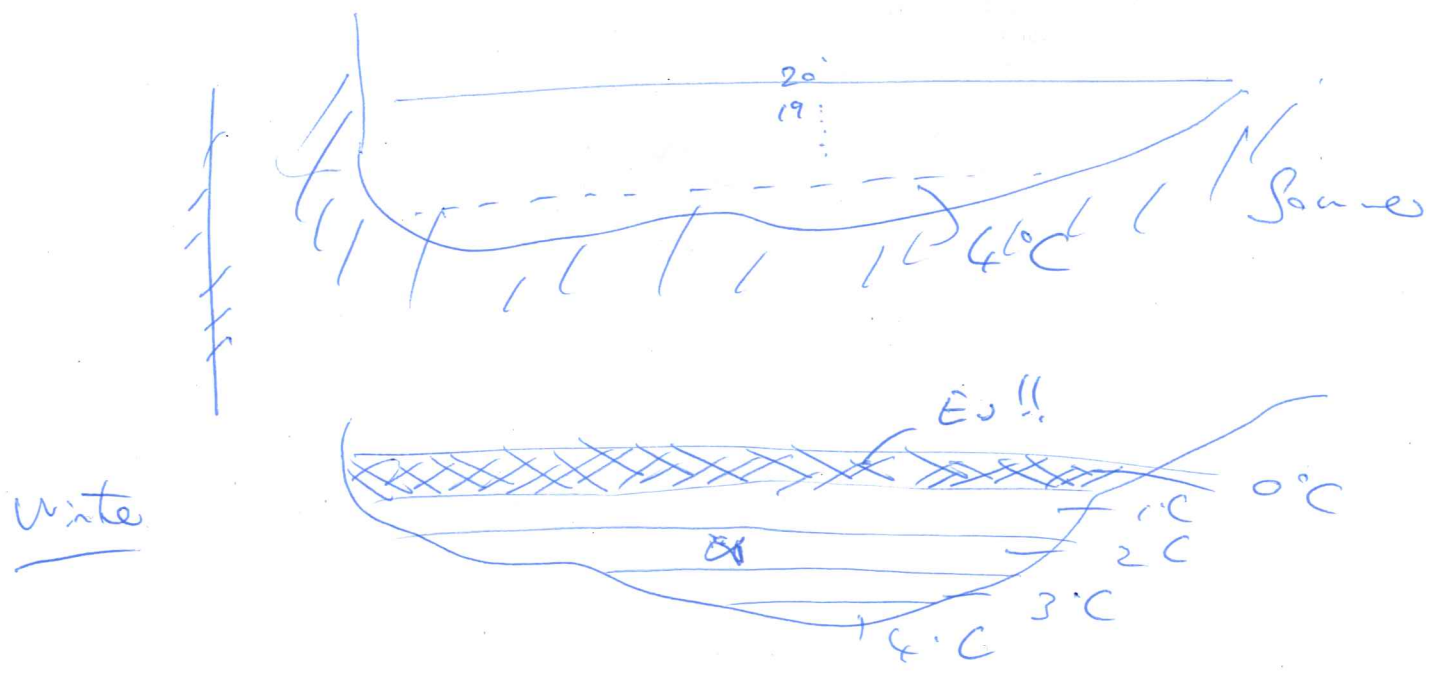
Phasendiagramm des Wassers

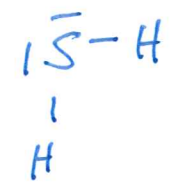
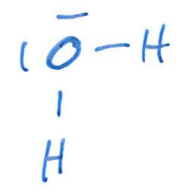


- fest
- flüssig
- gasförmig



- a) schmelzen
- b) erstarren
- c) resublimieren
- d) sublimieren
- e) verdampfen
- f) kondensieren



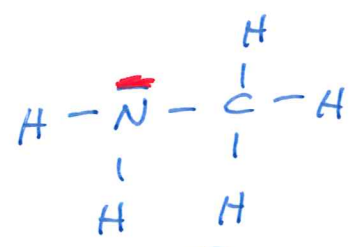
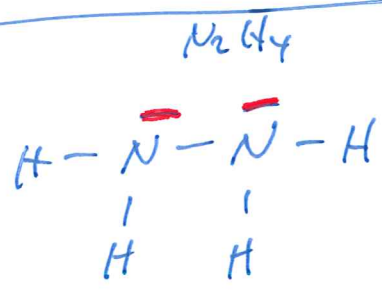


	H ₂ O	H ₂ S
H-Brücke	ja	✗ (nein)
Dipol-Dipol	ja	ja
VdW	10 e ⁻	18 e ⁻

→ ja ≈ EN(C) ≈ EN(S)

S_{dp}(H₂O) > S_{dp}(H₂S)

Zfp. 100°C -60°C



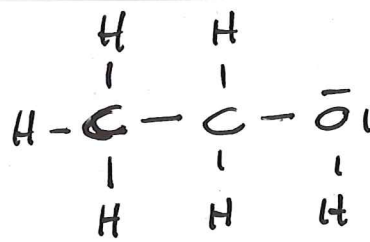
(A)

(B)
polar

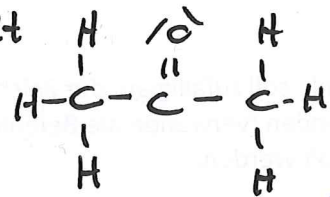
C: 6e⁻
H: 1e⁻
N: 7e⁻

	A	B
H-Brücke	✓	✓
Dipol-Dipol	? ja / nein	ja
VdW	18 e ⁻	18 e ⁻

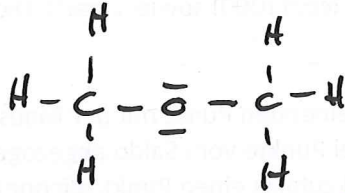
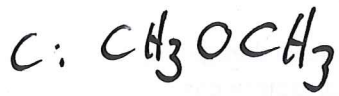
S_{dp}(A) > S_{dp}(B)



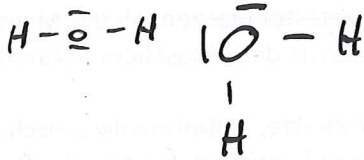
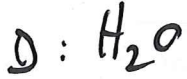
H-Br ✓
Dipol: ja



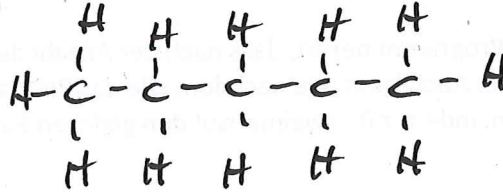
H-Br x
polar



H-Br: x
polar (!)



H-Br: ja !!
polar



H-Br: nein
nicht polar

Mischung?

A + H₂O

ja

E + H₂O

nein

B + H₂O

ja ✓

A + E

ja !!

C + E

nein

A + A

ja (!)

D + D

ja !!

Mischung ja/nein

ja:

Gleiches zu gleichem

