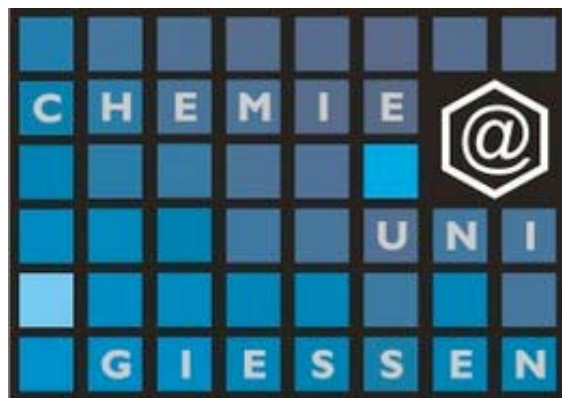


# Digital Media in Higher Chemistry Education

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# What to expect

- Do we need to use digital media ?
- Digital helpers (prs, tablets)
- Electronic lectures and courses
- Electronic exercises and examinations
- „MOOCs“, From students for students

# Do we need to use digital media ?

## 1977 Star Wars



- No mobiles
- No calculators
- No personal computers



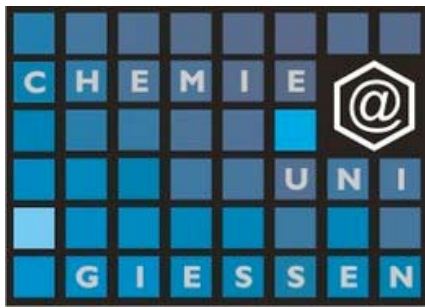
# Predictions

"I think there is a world market for maybe five computers."

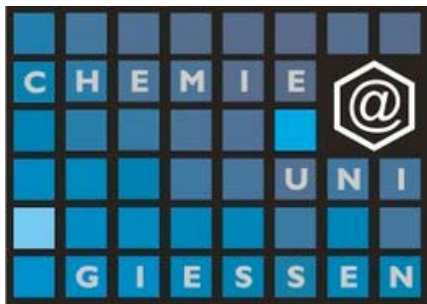
-- *Thomas Watson, chairman of IBM, 1943*

"There is no reason anyone would want a computer in their home." -- Ken Olson, president, chairman and founder of Digital Equipment Corp., 1977

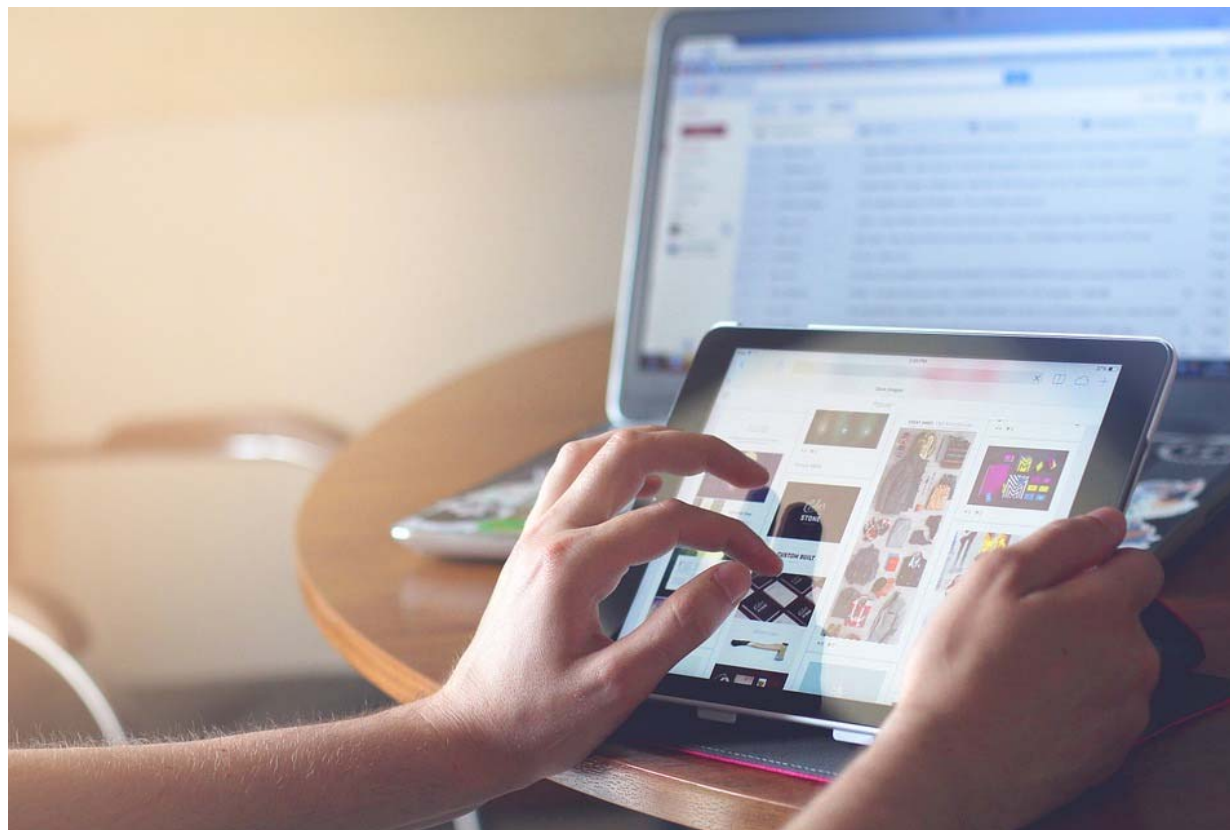
"640K ought to be enough for anybody." -- Attributed to Bill Gates, 1981, but believed to be an urban legend



# Medieval helpdesk



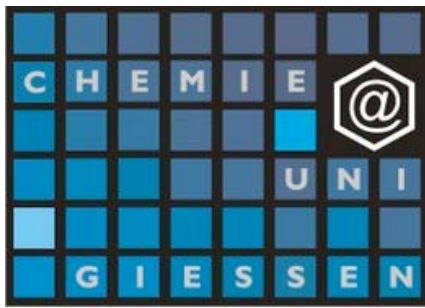
# Digital helpers





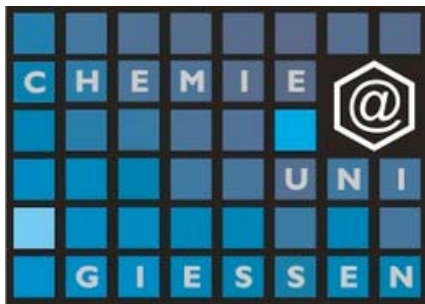
# Personal Response Systems

- Expensive
- Time consuming
- Unpractical (batteries, reach the receiver...)
- Additional software required



# Use mobiles





# All you need is a browser

<https://arsnova.thm.de/mobile/>



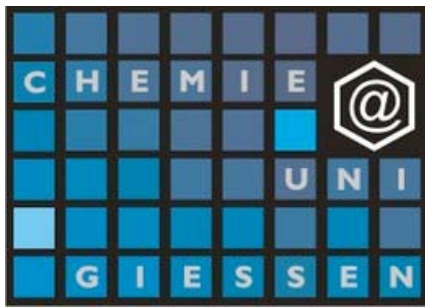
Dozent/in



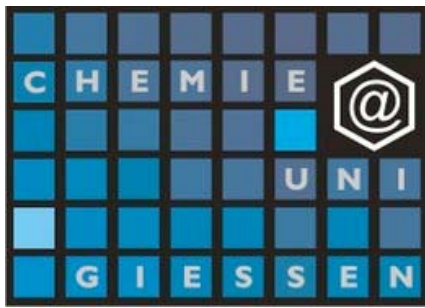
Student/in



Anleitung



# Substitute the blackboard



# Notes, WritePad, WRITEit...

# Electronic lectures and courses

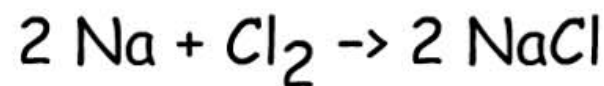


# Lecturnity

## Stoffumwandlung

- Die Umsetzung (chemische Reaktion) der beiden Stoffe Chlor und Natrium verläuft sehr heftig (**Energie wird frei**, exotherme Reaktion). Was passiert?

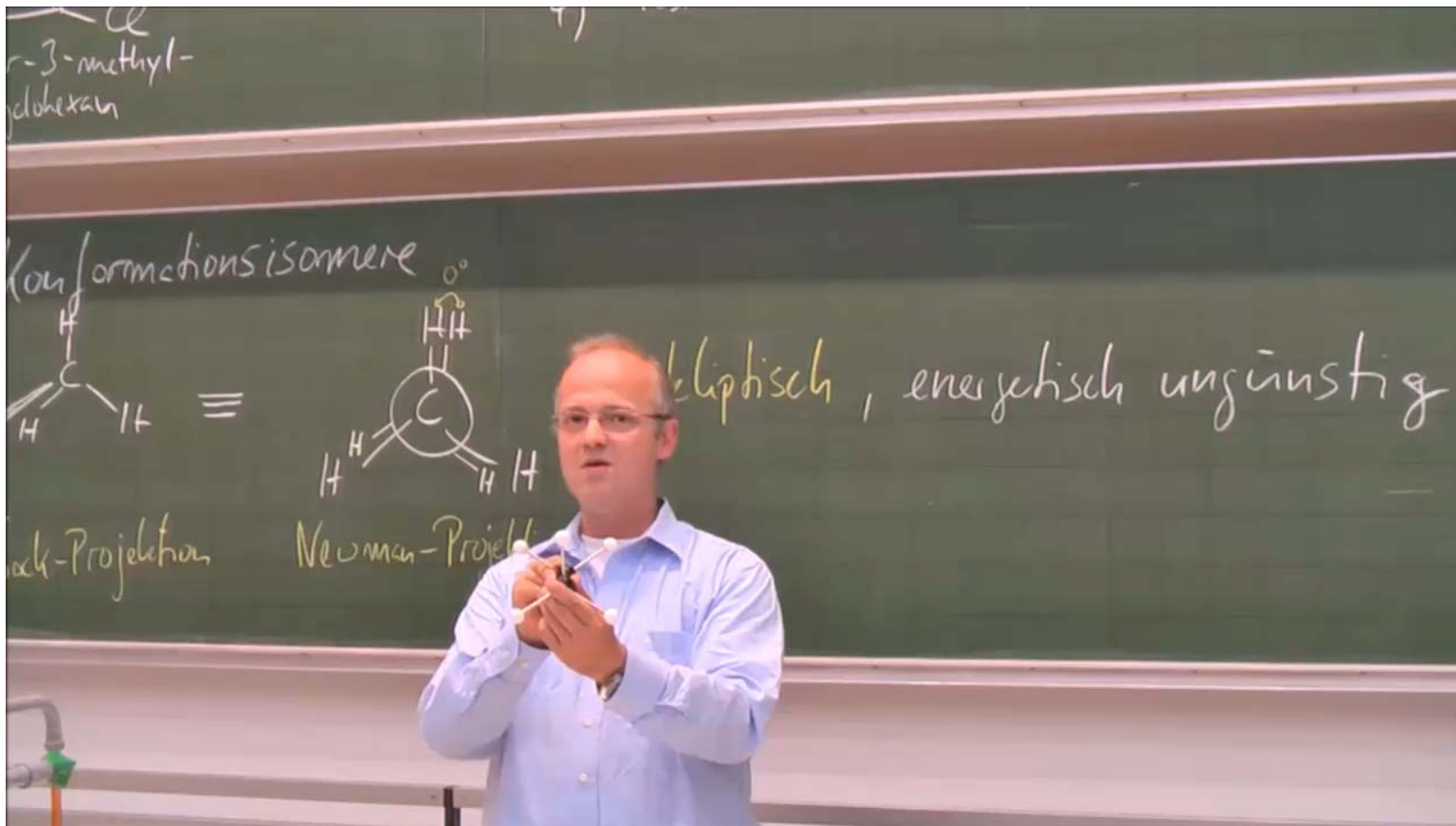
Bildung von Kochsalz (NaCl):



Grundvorlesung_Stunde_1_und_2		
1	Stoffumwandlung	0:00
2	Geschichte der Chemie	6:16
3	Versuch: Gold-Darstellung	9:11
4	Seite	9:17
5	Seite	9:57
6	Lerntechniken und Hilfen	14:38
7	Info Lerntechniken	

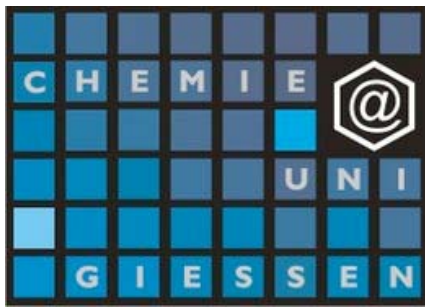


# Specially for the net

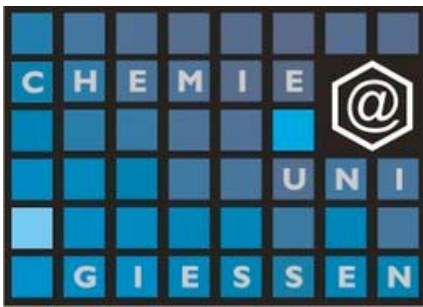


# Experiments are filmed





# Special Experiments



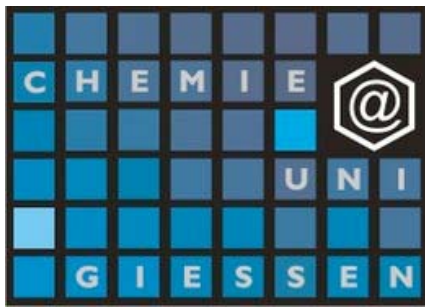
# In the studio

## Flammenfarben

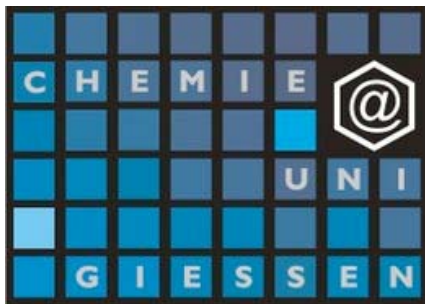
- Charakteristische Flammenfarben (Emissionsspektren der Elemente)
- Kalium: rötlich violett (Cobaltglas)
- Natrium: gelb-orange (Natriumdampfampe)

# Electronic lab





# Virtual ChemLab



# Electronic Exercise

8.	02-Stöchiometrie	D	Corinna Stohr Numerische Frage	16. Jan 2011	03. Feb 2011
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Berechnen Sie, wie viel g festes Kaliumthiocyanat (KSCN) man zur Herstellung von 100 mL einer 0,2 molaren wässrigen Lösung benötigt.

Hinweis: Geben Sie Ihre Antwort mit drei Nachkommastellen und ohne Einheit an!

Die benötigte Menge vom Salz beträgt:

Der Wert muss zwischen 1.92 und 1.96 liegen

9.	03-pH-Wert	A	Corinna Stohr Numerische Frage	16. Jan 2011	03. Feb 2011
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Berechnen Sie den pH-Wert einer 0,01 molaren HBr-Lösung. Hinweis:

Geben Sie Ihre Antwort ohne Einheit an!

Der pH-wert ist:

Der Wert muss zwischen 2 und 2 liegen

# Electronic Exercise

71.011-Reaktionen C

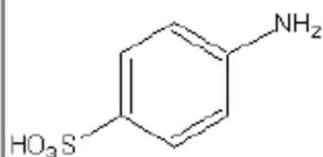
Christine Kuhl

Multiple Choice Frage  
 (Mehrfachauswahl)

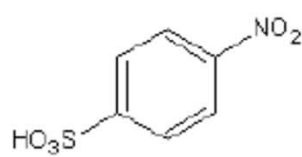
01. Feb  
 2011

10. Feb 2011

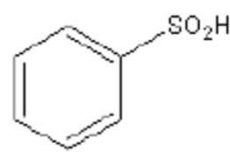
Geben Sie das/die Hauptprodukt/e bei folgender Reaktion!



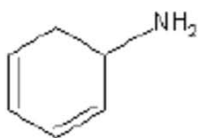
A



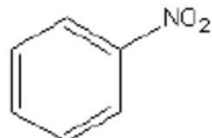
B



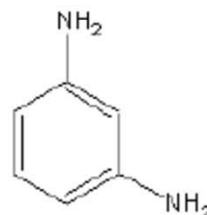
C



D



E

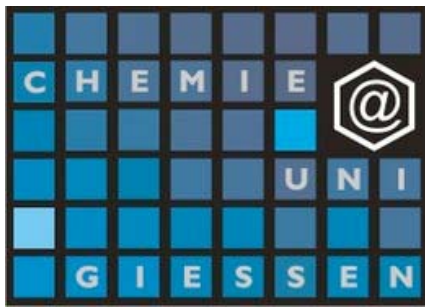


F

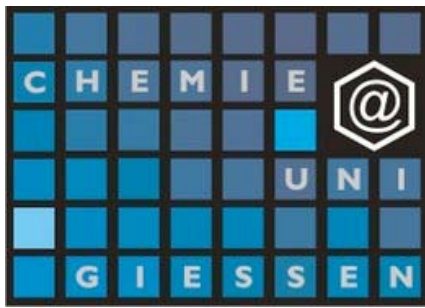


# Electronic Examinations

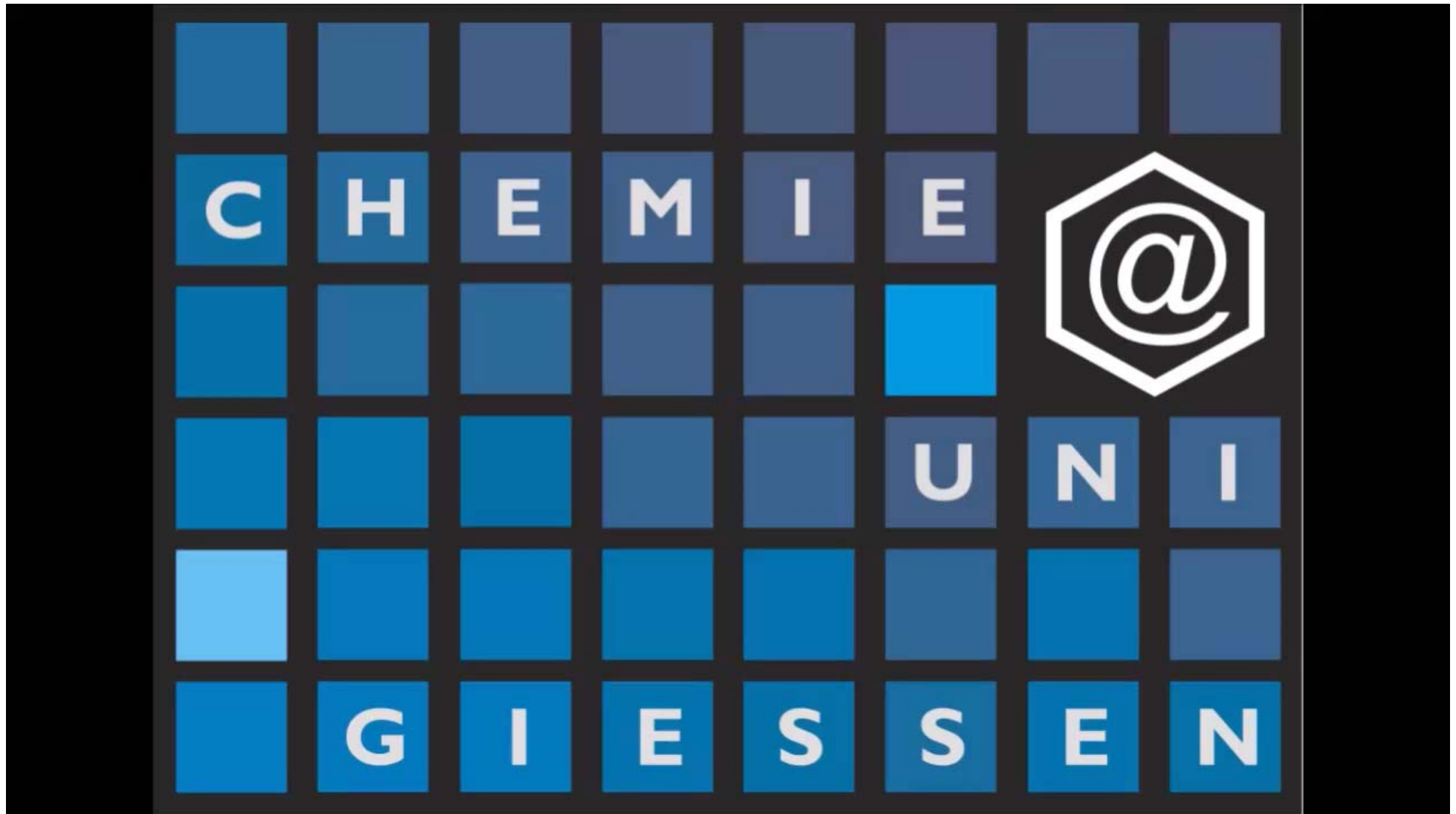




# „MOOCs“, From students for students



# Videos by students

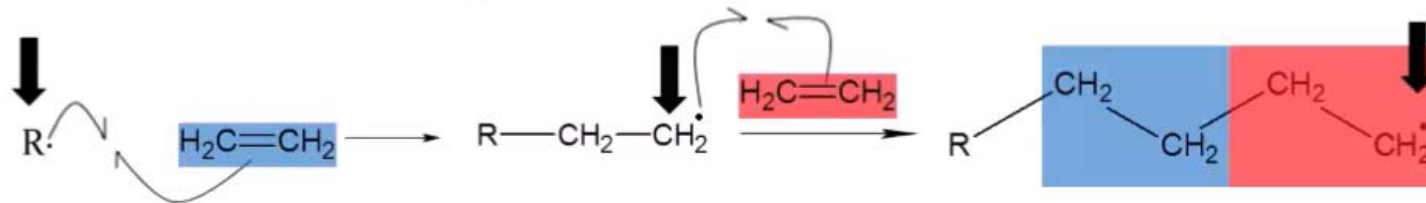


# Videos by students

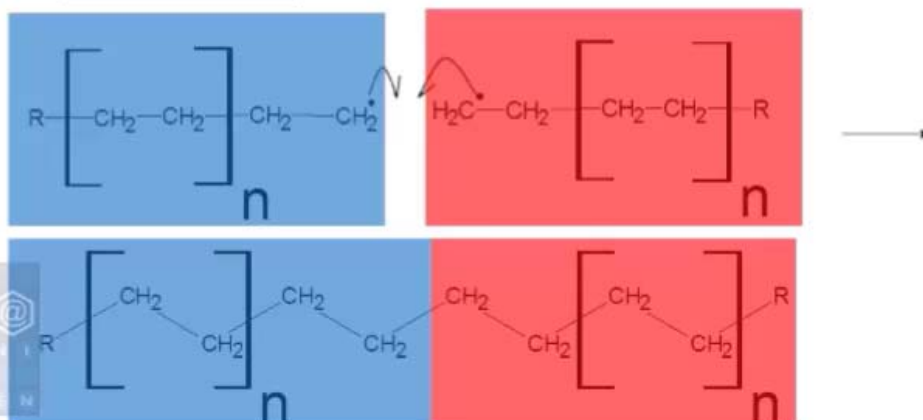
## Reaktionsmechanismen

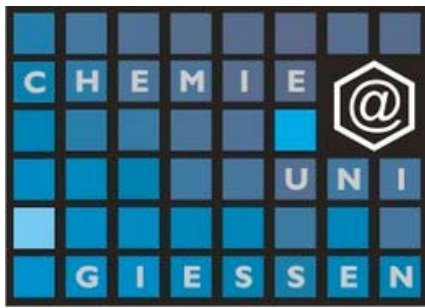
### Radikalisch

#### Kettenstart und Kettenfortpflanzung



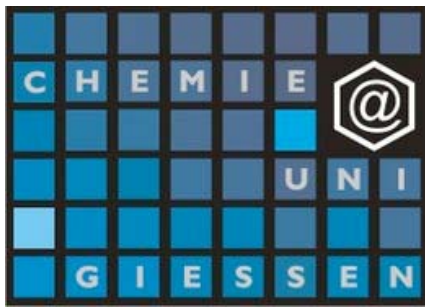
#### Kettenabbruch





# New University





# Summary

- Use of digital media **can** be an advantage
- It is time consuming
- Electronic courses are **never** as good as real courses
- Additional offers for „home learning“
- Digital media can help to activate students (types of learners)