

Handheld Photometer for Calibration of Sensors

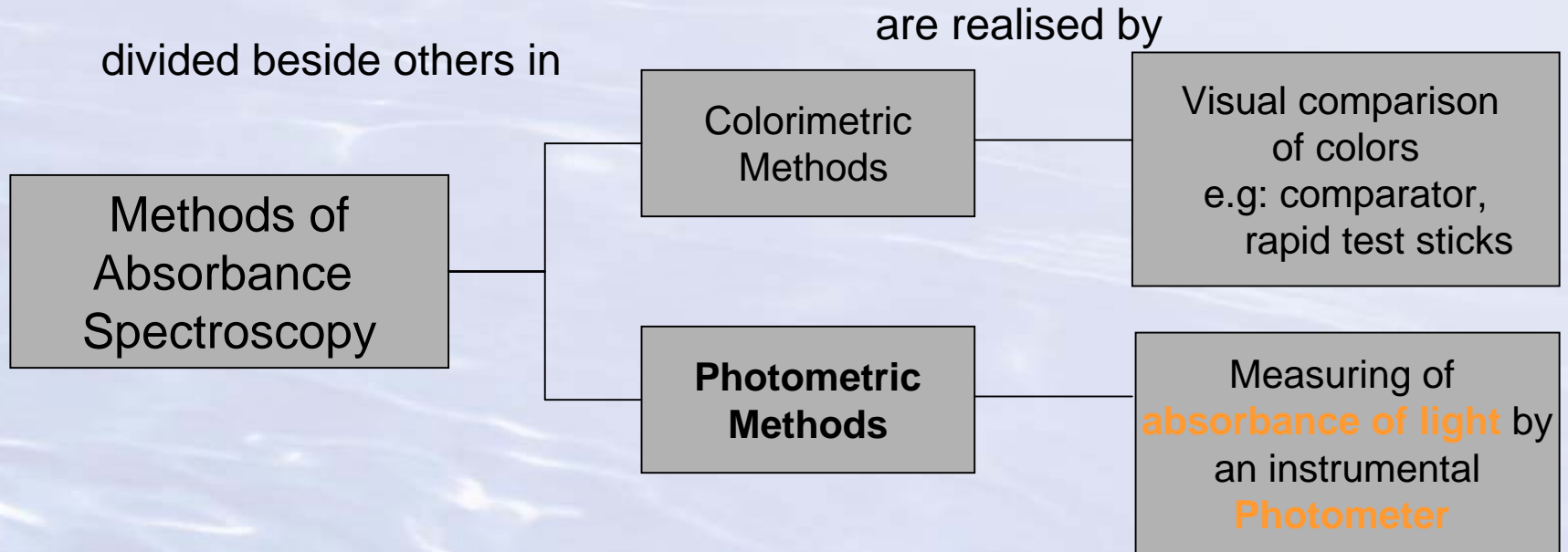
- DT 3 handheld photometer for hydrogen peroxide
- DT 4 handheld photometer for chlorite

Inhalt

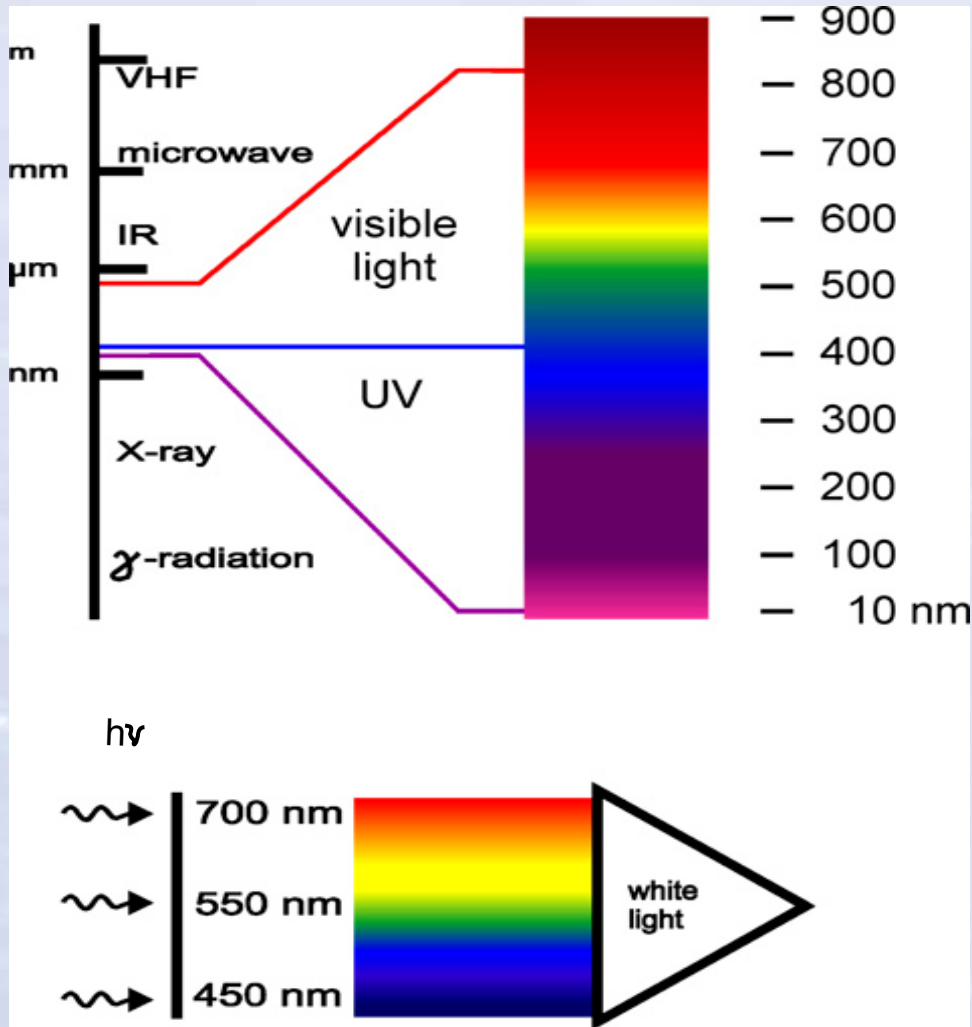
- Fundamentals of photometry
- Sales Arguments: photometer for hydrogen peroxide DT3
- Sales Arguments : handheld photometer for chlorite DT4

Methods of Absorbance Spectroscopy

- Definition:
 - Quantification of a chemical reagent (analyte) by an optical measuring procedure
 - **directly**: Measurement of the absorbance of the analyte itself
 - **indirectly**: Measurement of a compound, which originates from a chemical reaction of the analyte with an added reagent

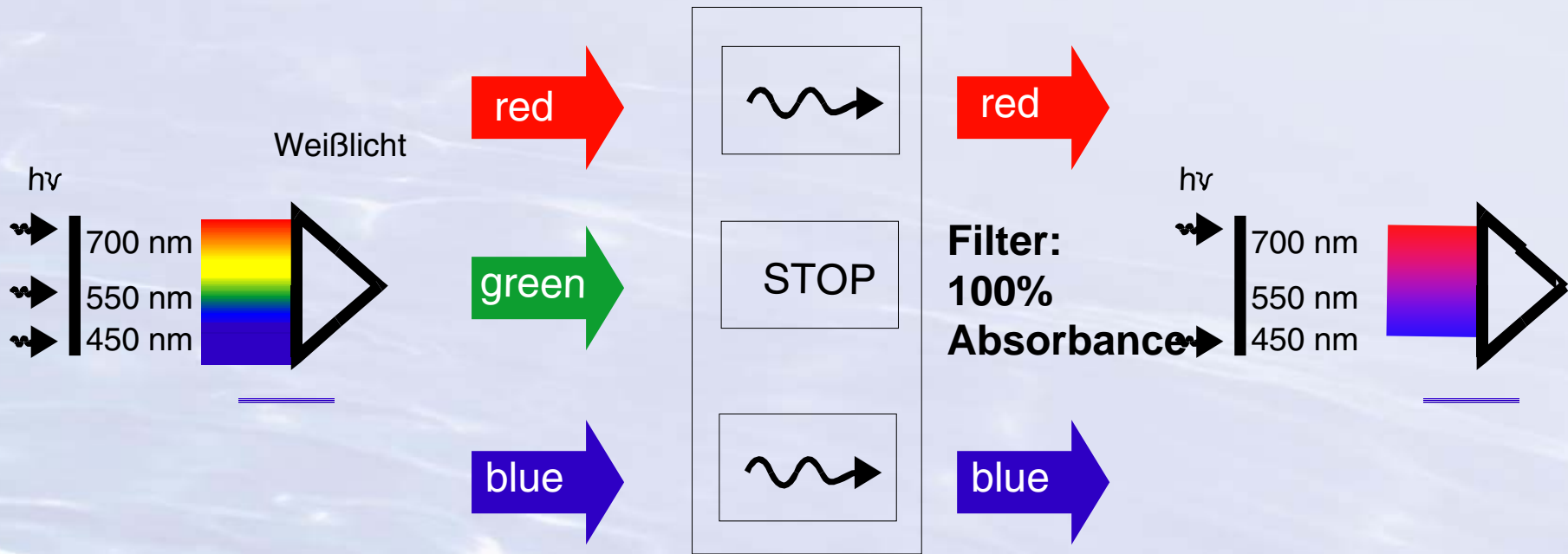


Spectrum of Light



Absorbance of Light

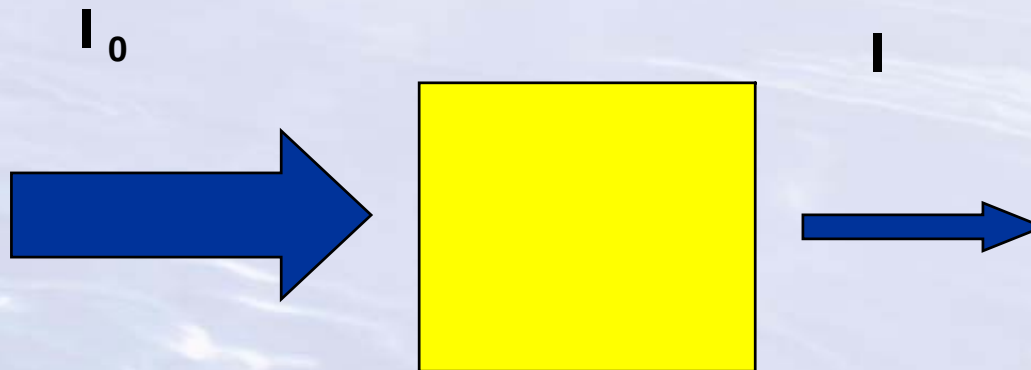
- Absorbance of a color (range of wavelength)
e.g *green* is absorbed 100% by a special filter:



Quantification of Light Absorbance

- *Extinction*: degree of light absorbance
- *Transmission*: degree of light transparency

Transmission [%]	T[%]	0	10	20	30	40	50	60	70	80	90	100
Extinction [Abs]	E[Abs]	• 1.00	0.50	0.30	0.15	0.05	0.00					



$$E = \lg \frac{I_0}{I}$$

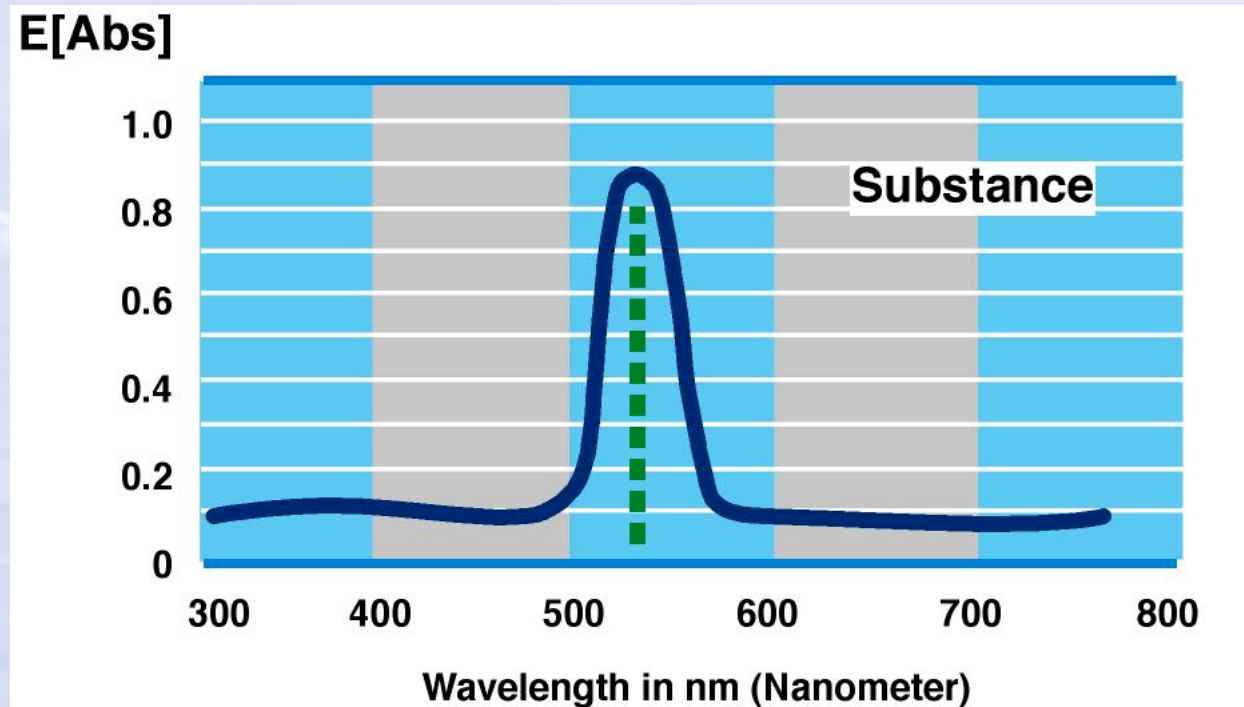
E: Extinction

I_0 : radiation intensity of incident light

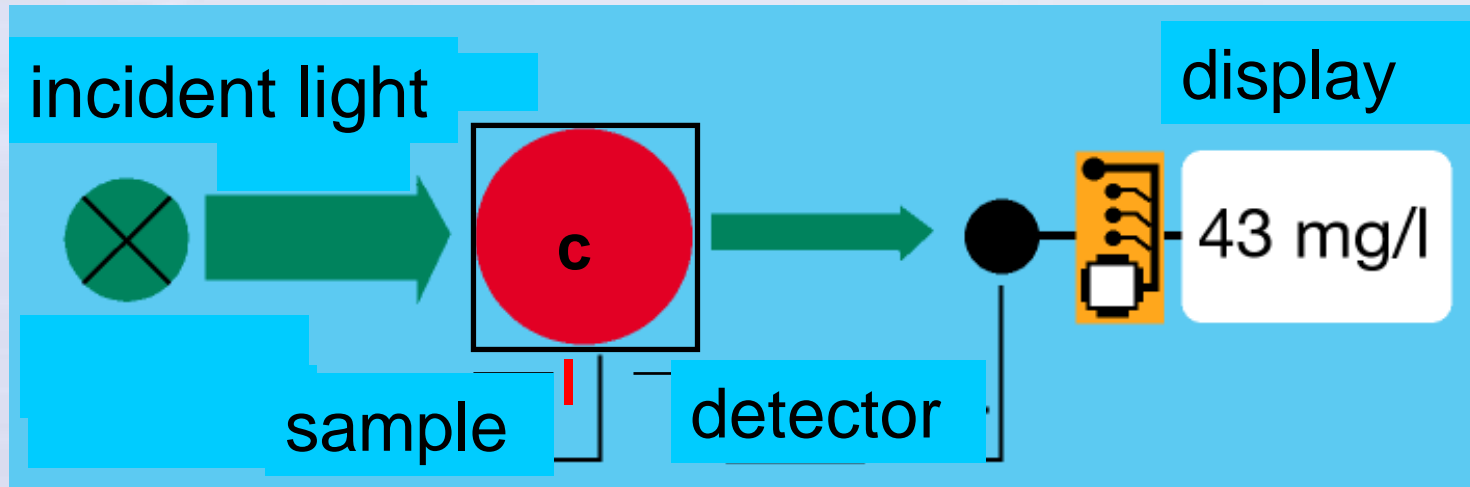
I: radiation intensity of penetrating light

Absorbance Spectrum

- Information from an absorbance spectrum of a substance (analyte)
 - Wavelength: qualitative Information: which substance
 - Extinction: quantitative Information: which concentration



Photometric Measurement of the Concentration



Light with definite wavelength e.g. LED

sample with analyte-**concentration c** in a measuring cell with **length l**

Light sensitive detector e.g. photo diode

- **Lambert-Beer Law**

extinction (measuring value)

molar extinction coefficient [$l \times \text{Mol}^{-1} \times \text{cm}^{-1}$]

$$E = \epsilon \cdot l \cdot c$$

Photometer DT3 for Determination of H₂O₂



Ordering information

- Photometer DT3 complete with bag: Part no. 1023143
- Reagent for hydrogen peroxide, 15ml, Part no. 1023636
- 5 pieces round cells with cap (diameter 16 mm), Part no. 1024072

Photometer DT3 for Determination of H₂O₂

Features/Customers Benefit

- Customised measuring range for calibration of the H₂O₂-Sensor
 - Two measuring ranges: 1 to 50 mg/l and 40 to 500 mg/l
 - Unique photometer for H₂O₂ with these measuring ranges
- Simple handling and simultaneously high accuracy
 - Simpler than extensive preparation of standard solutions
 - More accurate, than rapid colorometric test sticks
 - Faster than titration
- DEV-based Method (*Deutsche Einheitsverfahren H 15*)
 - reliable, approved method with less interferences
 - long term stable dye; so different reading time is not critical

Photometer DT4 for Determination of Chlorite



Ordering Information

- Photometer DT4 complete with bag, Part no. 1022695
- Stirrer for stripping og chlorine dioxide, Part no. 1022754
- 3 pieces spare cells, Part no. 1007566
- DPD reagent set, each bottle 15 ml, Part no. 1007567
- Chlorine dioxide tablets Nr.1 R 127, Part no. 501317
- Chlorine dioxide tablets Nr.2 R 128, Part no. 501318

Photometer DT4 for Determination of Chlorite

Features/Customer Benefits

- Beside chlorite also the parameter: ClO_2 and chlorine available
- Customised measuring range for calibration of chlorite-sensor
 - Measuring range: 0.03 up to 2,5 mg/l
 - Unique photometer for chlorite with this measuring range
- Simple handling beside effectual accuracy
 - Simplier and more cost effective than ionchromatography
 - Affectual accurate for calibration of the chlorite-sensors
- Optimized DPD-based method for chlorite
 - Stripping of chlorine dioxide by the help of enclosed stirrer