

# Why do we need turbidity correction in algae class determination?

## Content

- Transmission detection as a tool in algae determination
- Influence of turbidity on algae class differentiation
- Disproportionate effects on fingerprints
- Method for compensating the influence of turbidity on algae class determination
- Implementation into bbe++

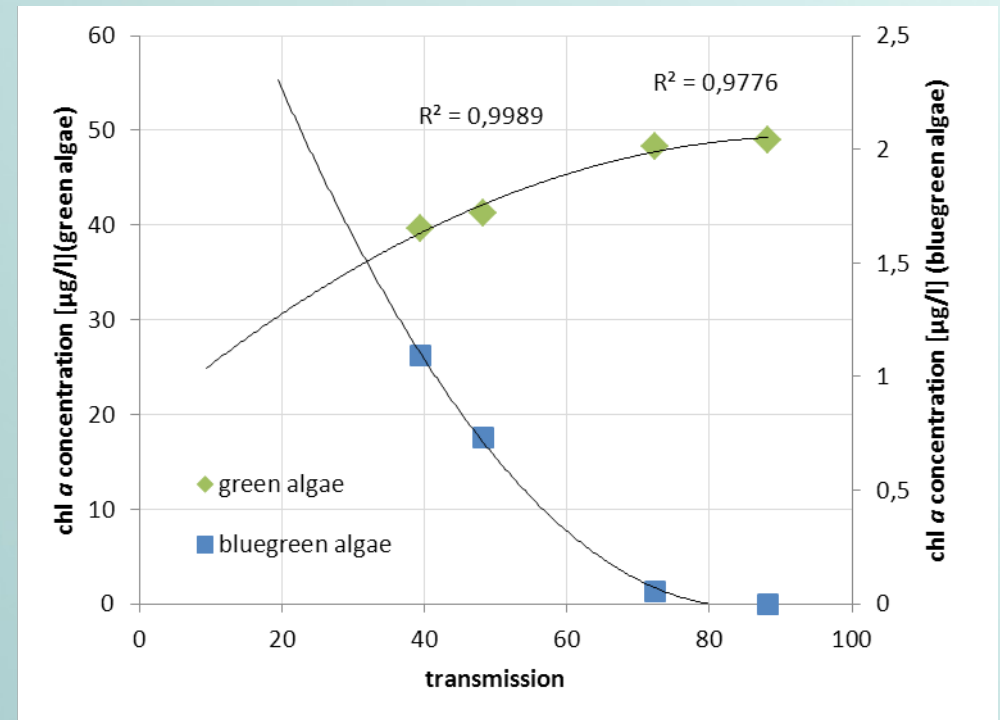
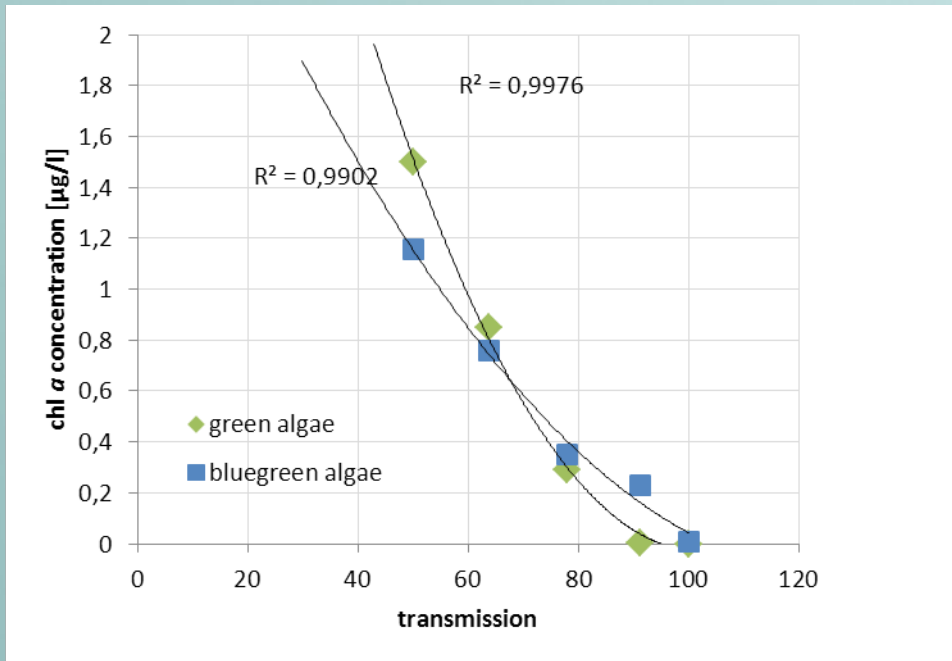
## Transmission

- Transmission lower than 75% has an measurable influence on the algae class differentiation
- There is a possibility of correcting that influence
- The transmission detection can be used for compensation
- It is not possible to correct the fitted result – the raw data has to be corrected

## Disproportion

- Turbidity has different influences on the excitation light:
  - longer wavelengths are reflected into the sensor  
→ 570nm, 590nm, 610nm give higher results
  - absorption effects influence the shorter wavelength  
→ 370nm, 470nm and 525nm
- The result is a disproportion in the measured fingerprint
  - → cyanobacteria appears due to a higher 590/610nm signal
  - → detection of fewer green algae due to signal loss at 470nm

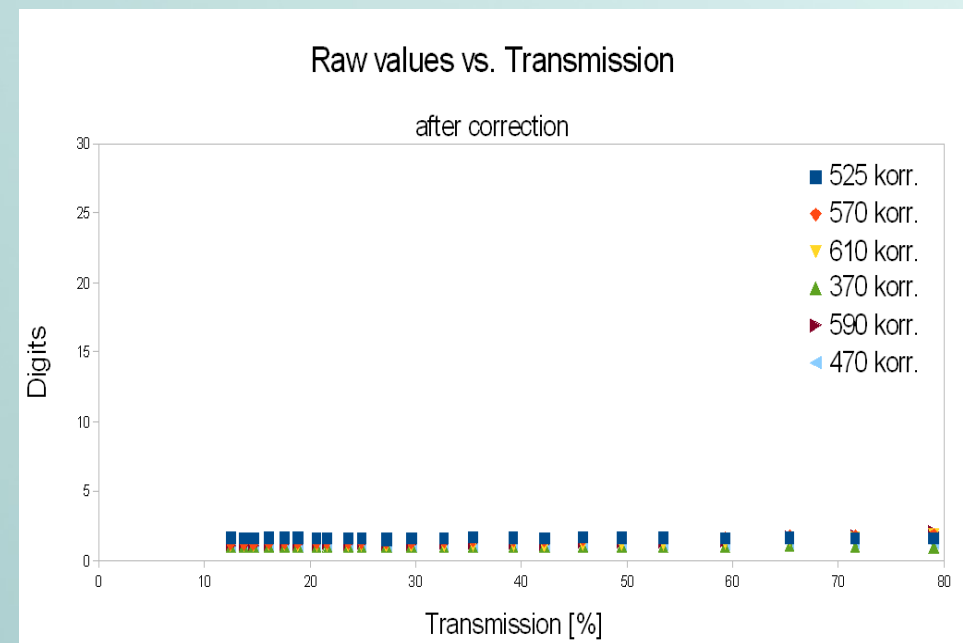
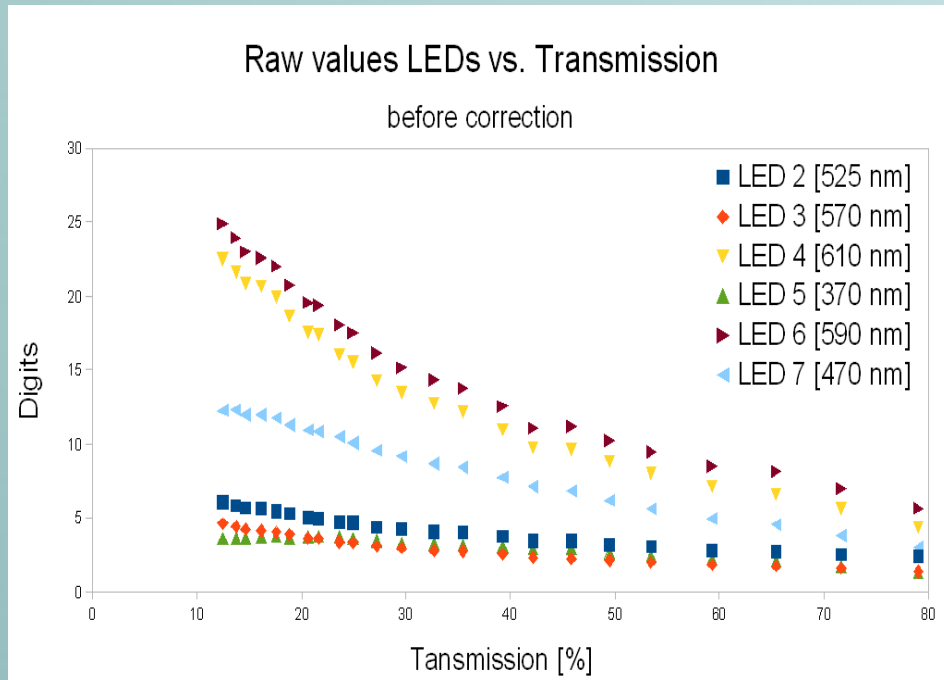
# Disproportion



## Method

- Clay (dried and powdered) as turbidity agent
  - In comparison to formazin not only reflection also absorption
  - In comparison to bentonite better equilibrium between absorption and reflection; more stable suspension
  - Good reproducibility – simply weigh the dried clay powder
  - Did not harm the used algae (*Chlorella vulgaris*, *Cyclotella meneghiniana* and *Microcystis aeruginosa*)

# Result of Compensation



Polynome 2<sup>nd</sup> degree →  $ax^2+bx+c$

# Implementation

**Parameter**

Historie  
Vorlagen  
Online

Parameterhistorie

Wählen Sie einen Parametersatz anhand seines Erstelldatums aus. Der ausgewählte Parametersatz kann in eine andere Datenbank exportiert werden. Er kann auch in die Zwischenablage kopiert werden. "Senden" lädt den ausgewählten Parametersatz in das Gerät.

Exportieren    Clipboard  
Matrix    Senden

Erstelldatum des Parametersatzes: 15.05.2012 15:08:56    Original

Allgemeine Parameter | Fitparameter | Messparameter | Trübungsparameter

Name	Wert	Einheit
Trübungs-kompensation	805	switch
FTU Polynom Faktor a	0,03	
FTU Polynom Faktor b	-5,9174	
FTU Polynom Faktor c	294,16	
FTU Reflexionskompensation LED 3 [525 nm]	0,01577	
FTU Reflexionskompensation LED 4 [570 nm]	0,02845	
FTU Reflexionskompensation LED 5 [610 nm]	0,05833	
FTU Reflexionskompensation LED 6 [370 nm]	0,00631	
FTU Reflexionskompensation LED 7 [590 nm]	0,04777	
FTU Reflexionskompensation LED 8 [470 nm]	0,01834	
FTU Abschwächungskompensation LED 3 [525 nm]	0,0014	
FTU Abschwächungskompensation LED 4 [570 nm]	0,0013	
FTU Abschwächungskompensation LED 5 [610 nm]	0,0015	
FTU Abschwächungskompensation LED 6 [370 nm]	0,0037	

OK    Abbrechen    Übernehmen

Parameters for correction

Parameter window bbe++



The End

Thank you for your attention