Why do we need turbidity correction in algae class determination?

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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
- Implemetation into bbe++

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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

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Disproportion

- Turbidity has different in fluences on the excitation light:
  - longer wavelengths are reflected into the sensor
    → 570nm, 590nm, 610nm give higher results
  - absorbtion 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

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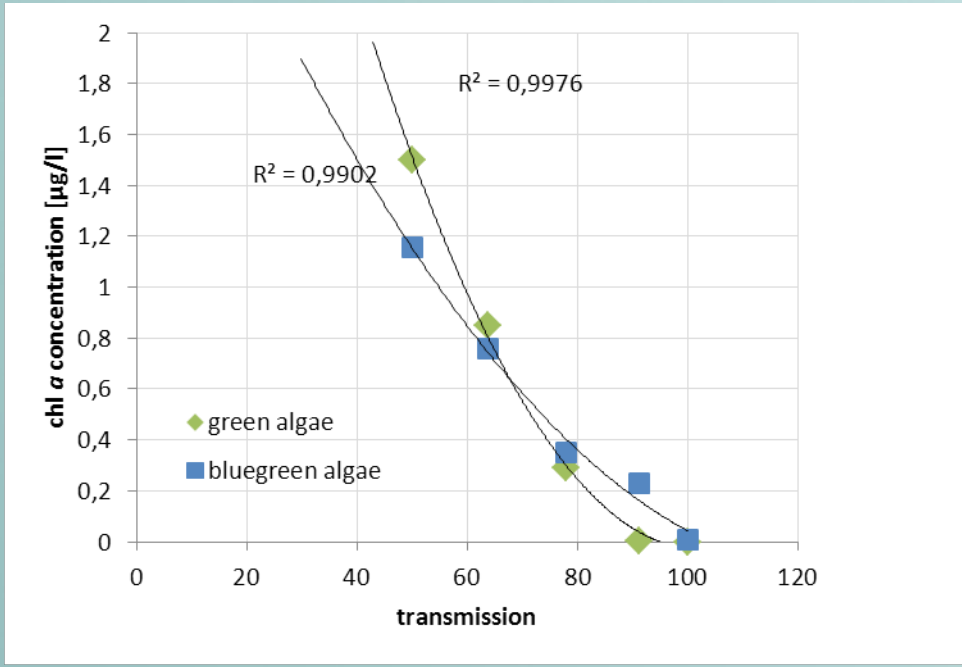
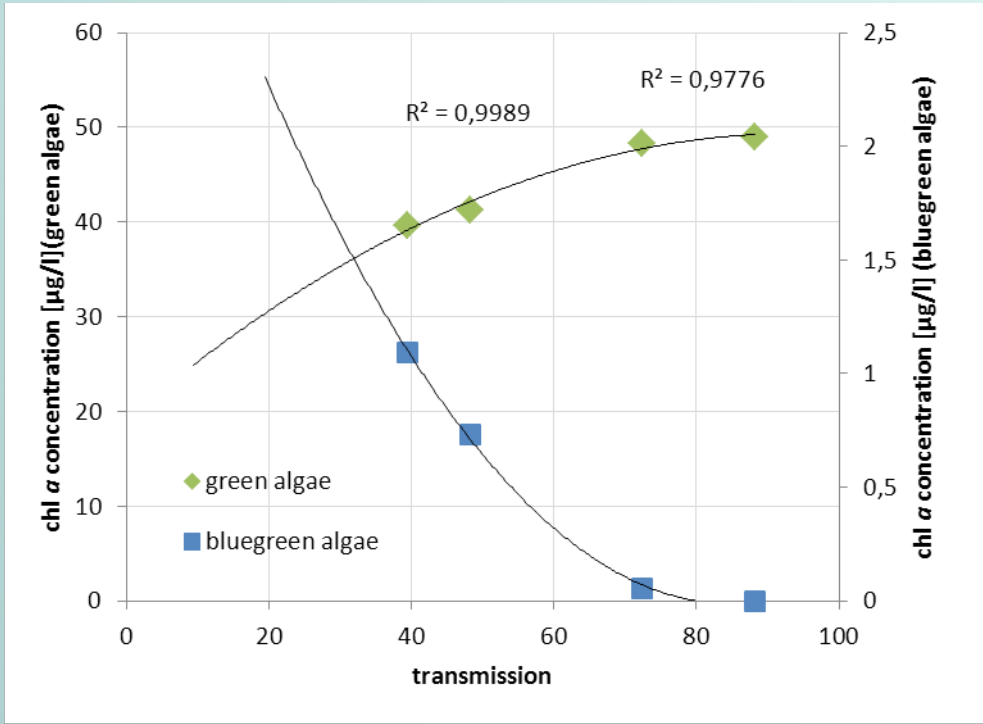
Disproportion





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Method

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

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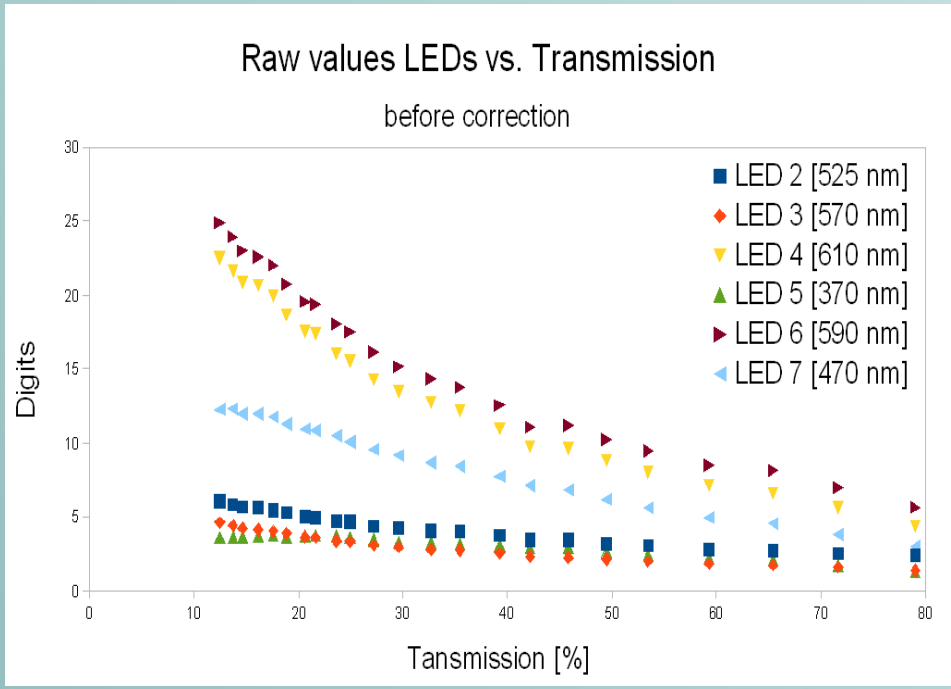
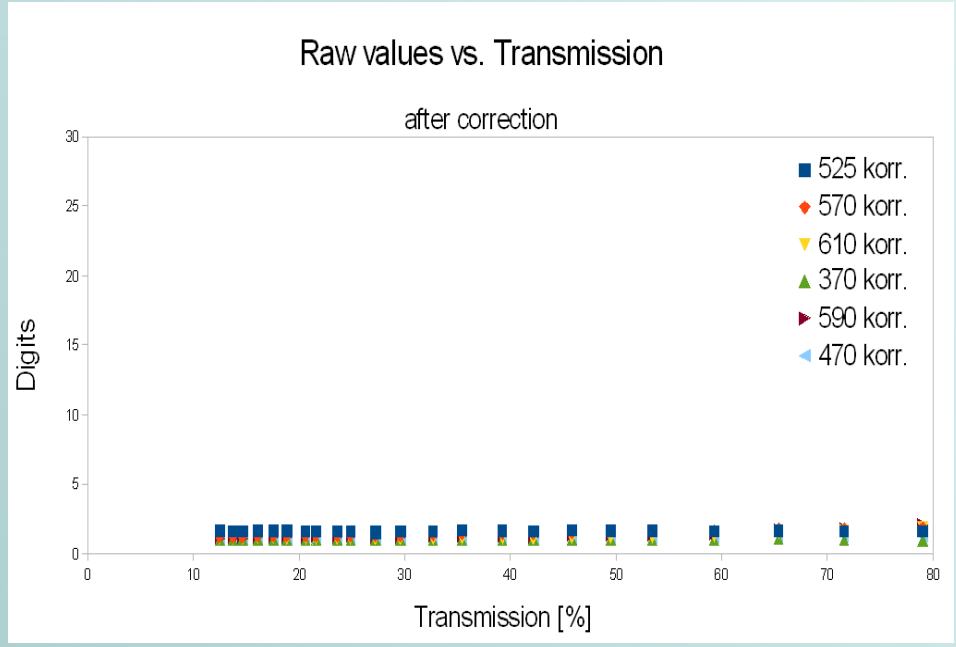
Result of Compensation





Polynome 2nd degree → ax^2+bx+c

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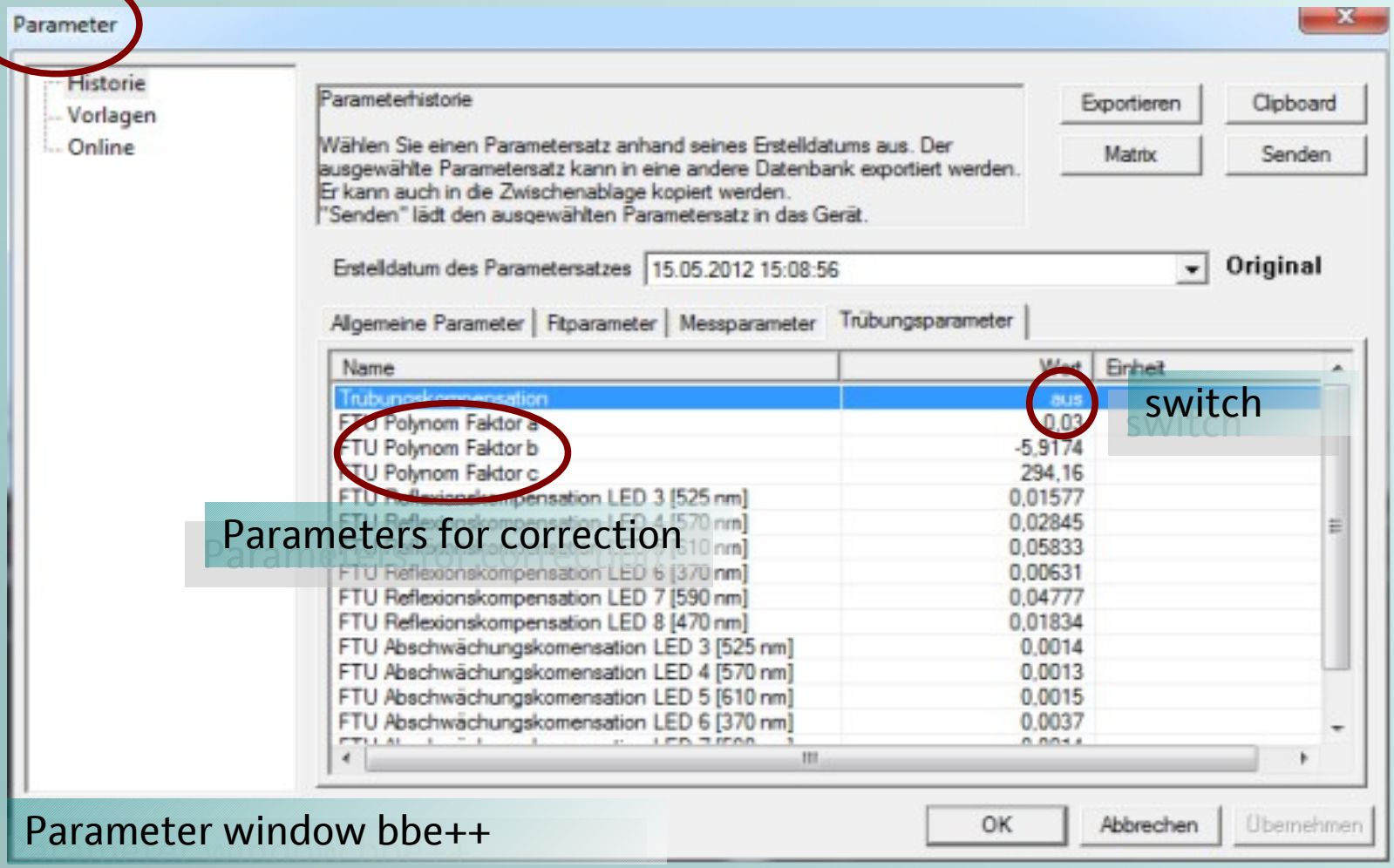
Implementation



Parameter window bbe++

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The End

Thank you for your attention

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