

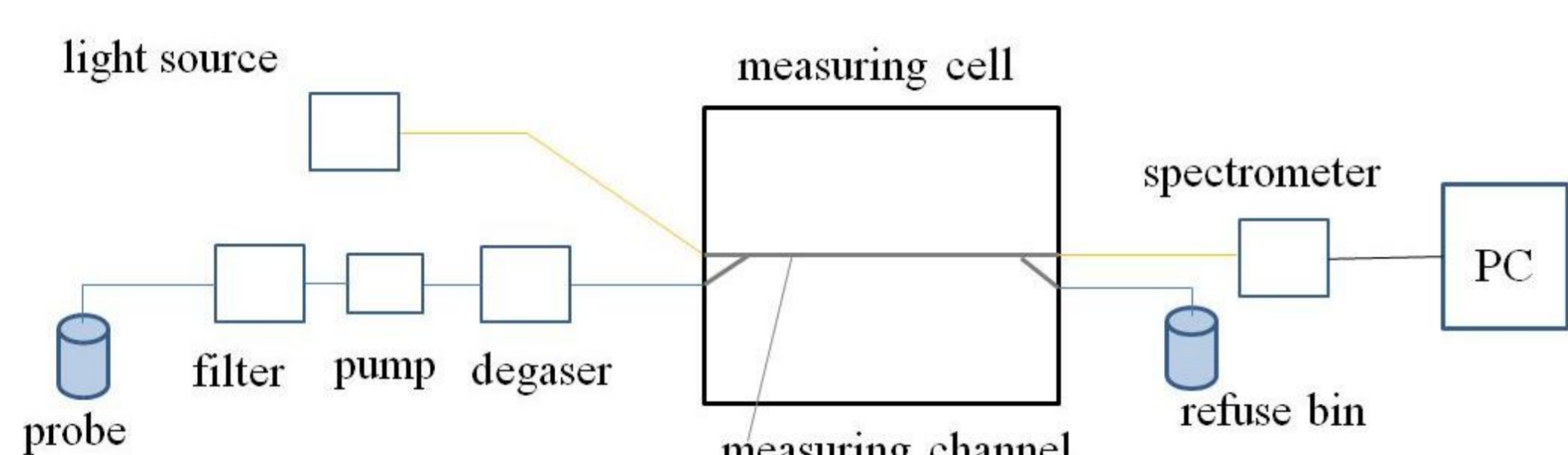
Quicklyzer – A New Developed Analytical Measurement System for Online Measurements of Specific Environmental Substances

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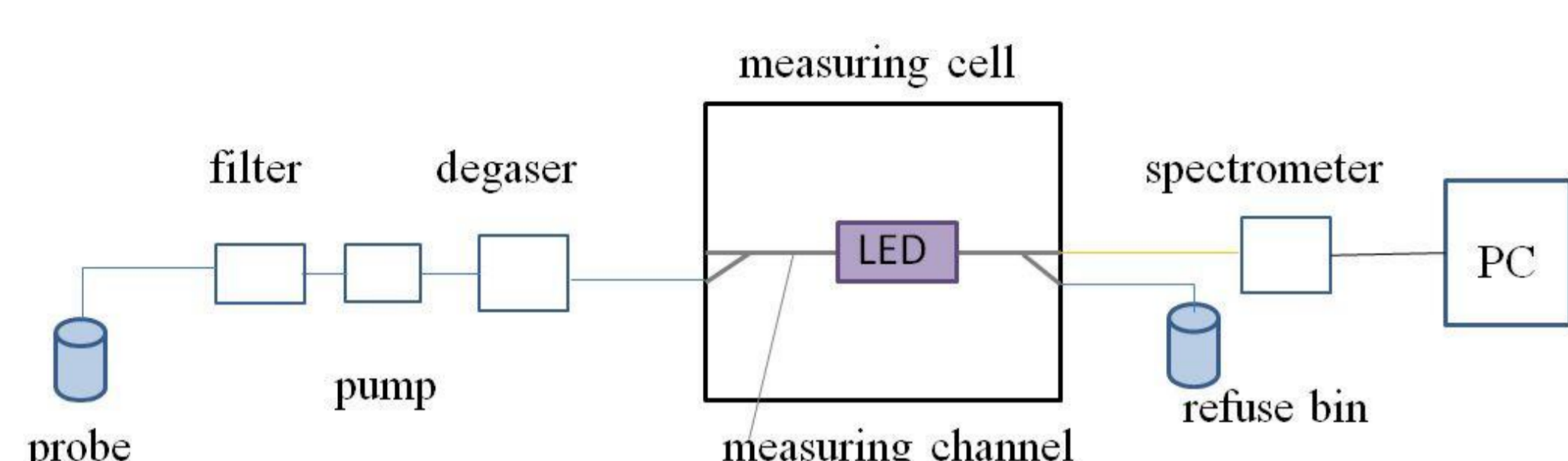
The Quicklyzer was especially developed for environmental analysis. In combination with wireless data communication it is possible to have a mobile measurement in the field and a long term control of measurement stations. Because of the analysis of specific environmental substances (nitrate, nitrite, humic acid) the quality of the soil and the amount of fertilizer can be determined. Online measurements lead to measurements without dynamic reduction and transformation processes that result during the transport to the institute.

Measurement Setup

For absorption measurements:

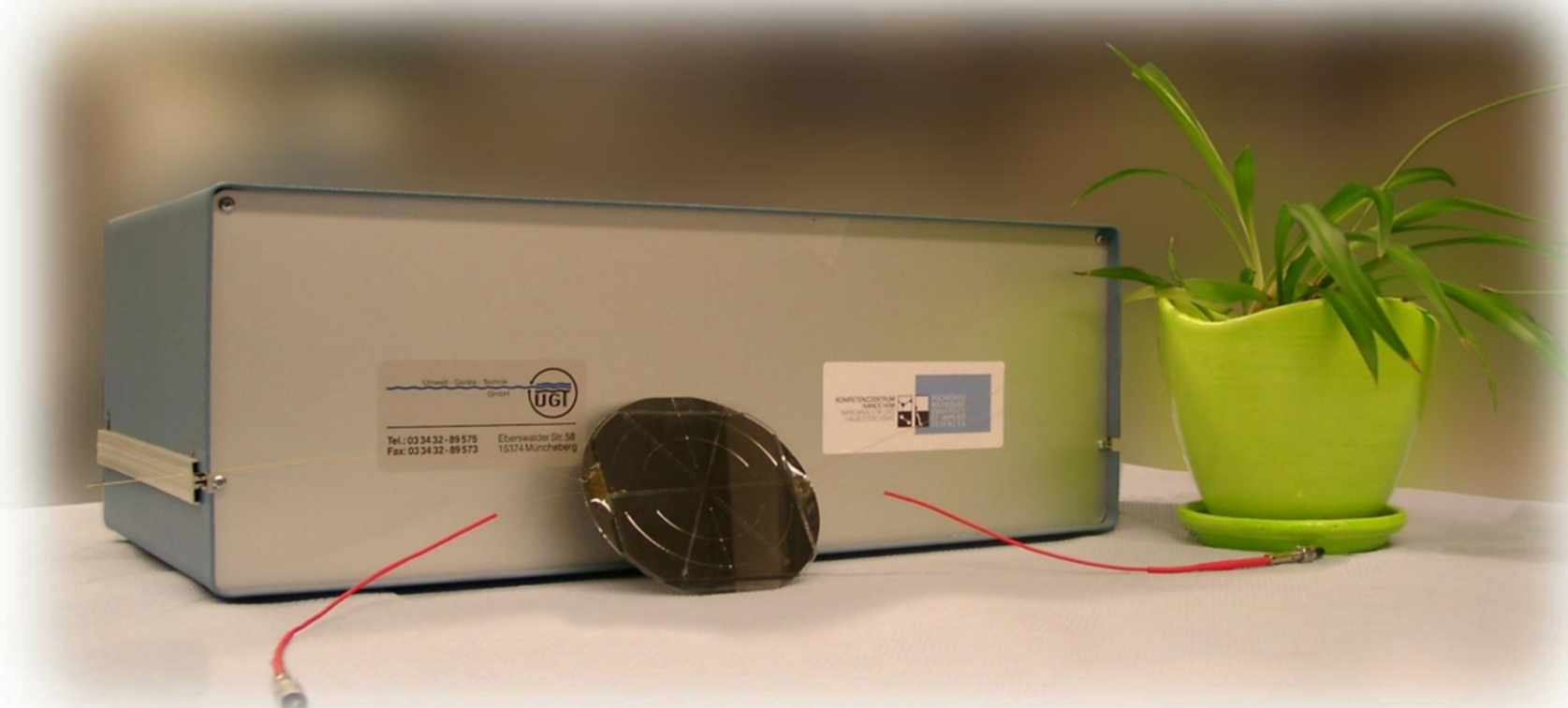


For fluorescence measurements:



Specifications

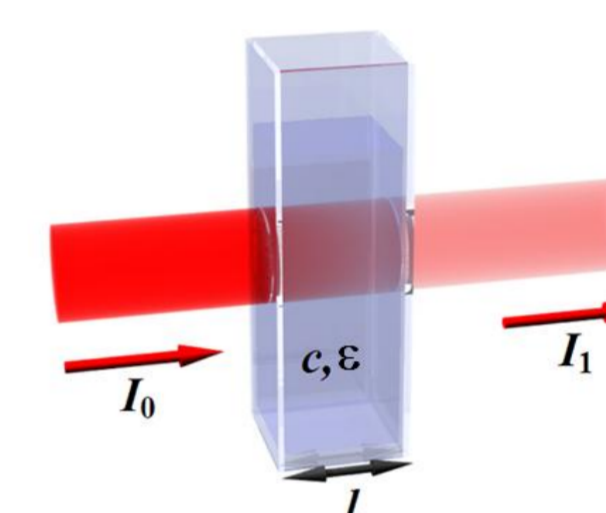
- Flow (continuous measurement) **< 3 ml/h**
- Initialization time **5 min**
- Power Supply **12 V**
- Spectral range **200-800 nm**
- Detection limit **1 ppm**



Measurement Principle

The Quicklyzer makes it possible to measure ionic contaminations in the range of ppm via self-absorption based on the Beer-Lambert law.

$$E_{\lambda} = -\lg\left(\frac{I}{I_0}\right) = \varepsilon \cdot \lambda \cdot c \cdot l$$

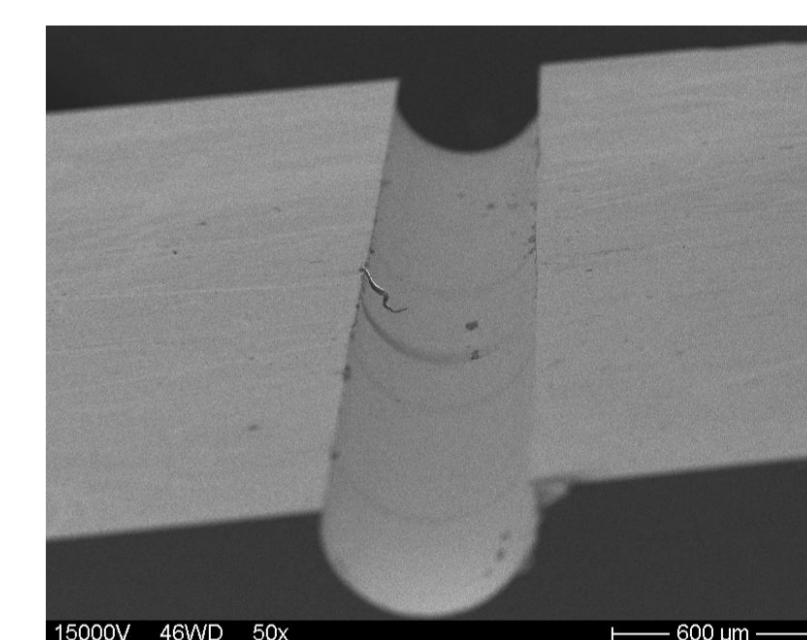


In future it will be possible to detect organic substances with the aid of fluorescence.

$$I_f = \phi \cdot I_0 \cdot (1 - 10^{-\varepsilon \cdot \lambda \cdot c \cdot l})$$

Microfluidic Channel

The dimensions of the measuring channel are in the high micro scale but the channels walls are in optical quality. (Roughness: 10nm ± 2nm)

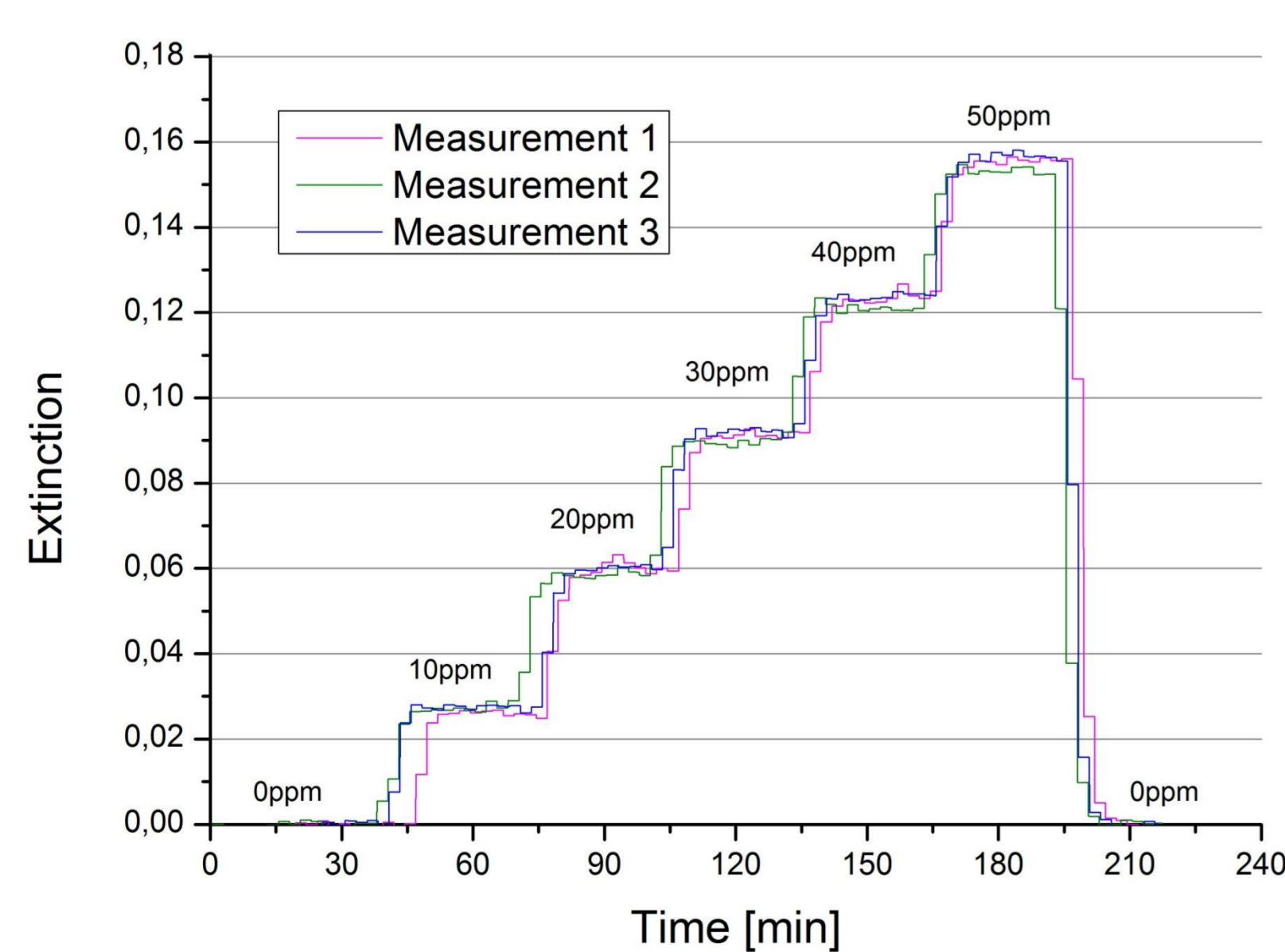


„Germany- Land of Ideas“

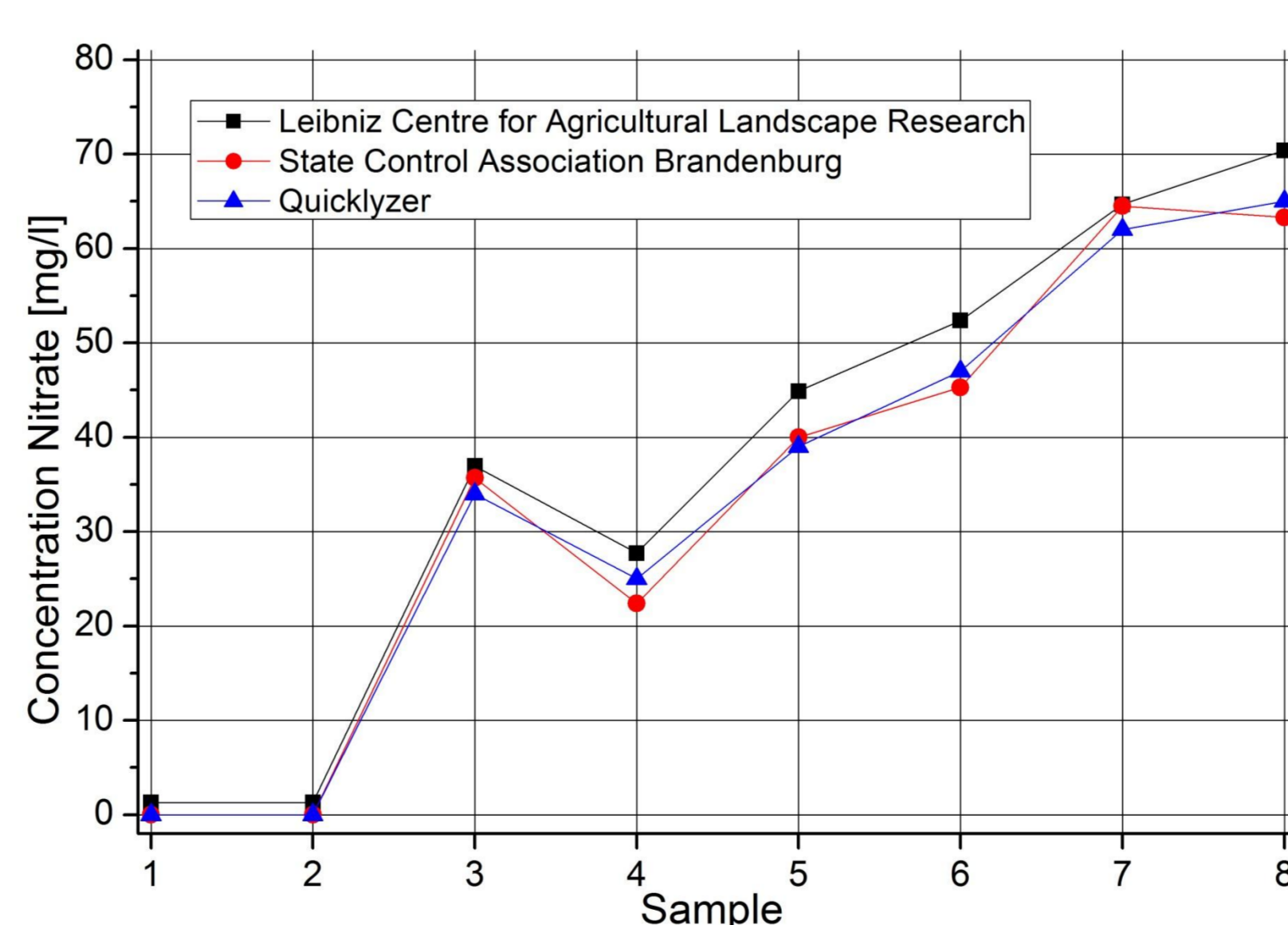
The project Quicklyzer was one of the prize winners of the „365 places in the land of ideas“ 2012.



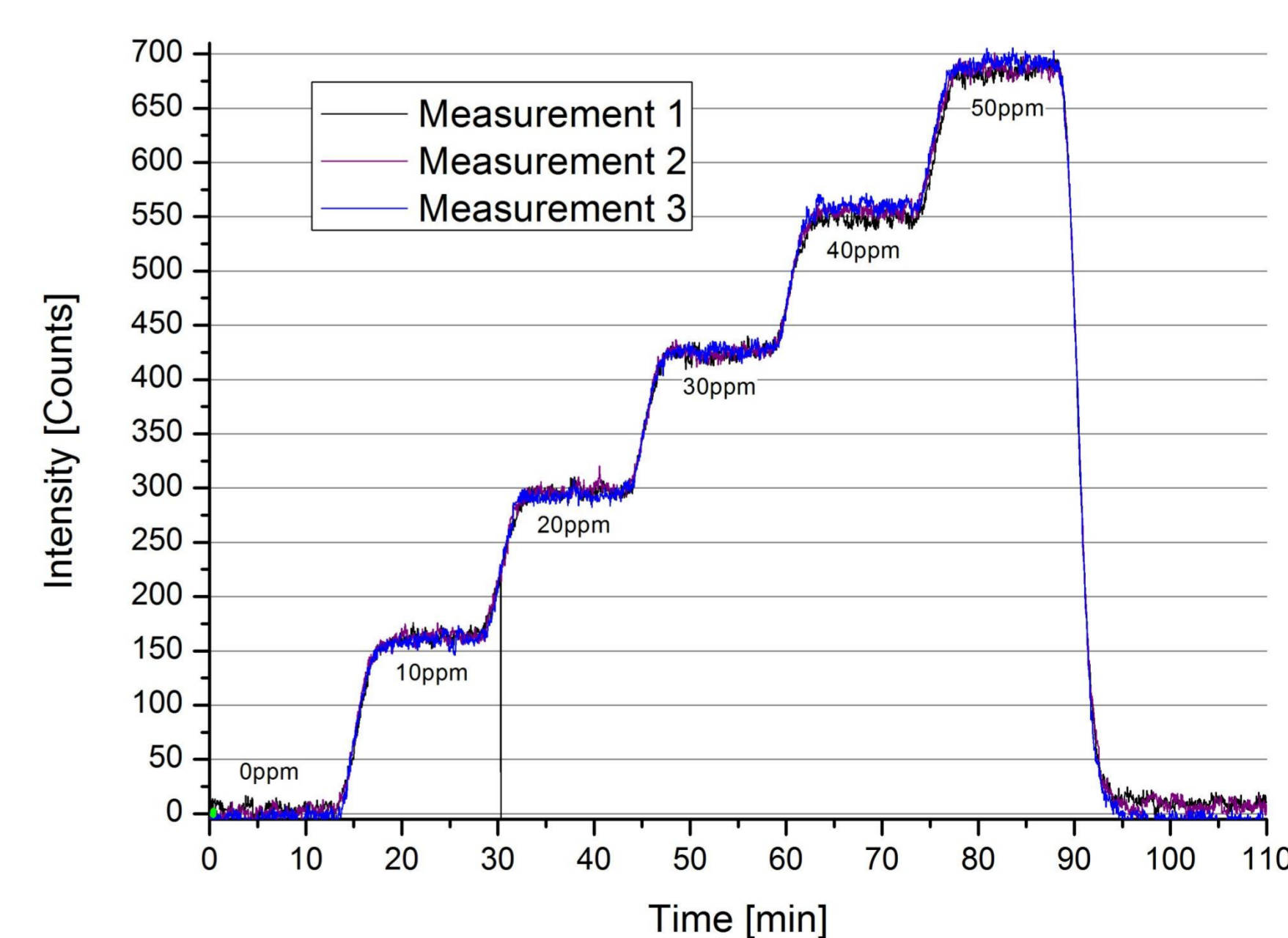
Measurements



Absorption measurements of different nitrite solutions



Comparison of the Quicklyzer and certified institutes (nitrate)



Fluorescence measurement of different humic acid solutions