



## **Characterisation and qualification of natural organic matter with a new online fluorescence sensor**

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Natural organic water compounds are determined usually with the bulk parameter DOC (dissolved organic carbon). The DOC is a heterogeneous parameter which consists of various organic fractions and shows often spatially as well as temporally a high dynamic range. The fluorescence spectroscopy is a tool for measuring individual DOC groups in a quick and easy way. A fluorescence sensor was developed within the framework of a research project that provides online detection of humic substances and organic polymers. Humic substances can be differentiated fulvic and humic acids, bio-polymers in proteins and algal chlorophyll-a. The chlorophyll fluorescence can be additionally assigned to green algae and diatoms as well as in cyanobacteria. The sensor has been tested during several measurement programs and was used in various waterworks for monitoring of raw water and treated water. The sensor is based on LED technology, works long term stable and is of low maintenance due to an autonomous cleaning unit. Using the sensor qualitative and quantitative changes of the raw water during drinking water treatment could be estimated efficiently. The processing stage of flocculation/filtration showed a significant reduction in the humic substances concentration, where macromolecular humic acids were removed with higher efficiency than low molecular weighted fulvic acids. Dynamical, seasonal-related processes in the water body of a drinking water reservoir could also be traced. Seasonal and single-event-related changes in temperature, turbidity and the composition of humic substances and algae were collected with high sensitivity for example during the autumn circulation in the water body.