



**Development of a detection method for the proof of activated carbon in wastewater effluents and other wastewater samples**

Currently more and more urban wastewater treatment plants add powdered activated carbon (PAC) in order to eliminate micropollutants from their effluent streams. For this purpose huge amounts of PAC are needed constantly. Additional separation stages such as sedimentation tanks and filters are used to remove the loaded PAC. It is assumed that a small fraction cannot be hold back and thus will reach the receiving water body. But until now no proof method is available to quantify the activated carbon content in presence of other organic wastewater solids such as microorganism (active sludge) and COD.

This research project focuses on the development of a new quantitative detection method for the proof of activated carbon in wastewater effluents and other wastewater samples. Two possible methods have been identified for this purpose: Thermogravimetric analysis (TGA) und Helium gas pycnometric analysis. First analyses with the TGA have been done since the year 2010 already. But still there is a high demand to simplify the handling and to increase the accuracy. Also the possibility to differentiate activated carbon and other organic solids by using the specific true density will be examined. For this purpose a Helium gas pycnometer will be used. Ultimately both methods will be compared against each other by giving their advantages and disadvantages.

Financing Institution:
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Duration
012015 – 05/2016



Figure: Thermogravimetric analysis und Helium gas pycnometer