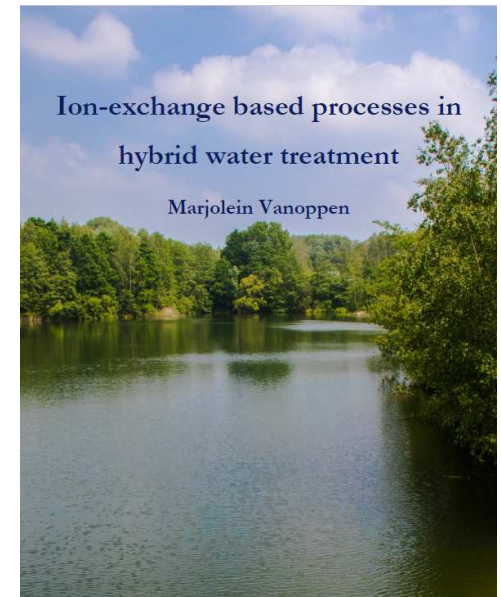


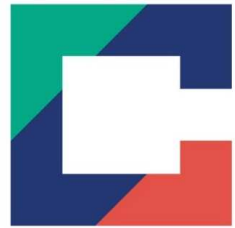
# Alternatieve waterbronnen

## de uitdaging van organica

Marjolein Vanoppen, Cameron Dierendonck // UGent/CAPTURE



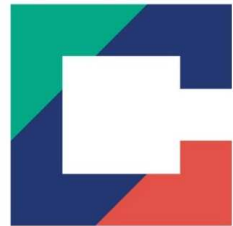
Ion-exchange based processes in  
hybrid water treatment  
Marjolein Vanoppen



# CAPTURE

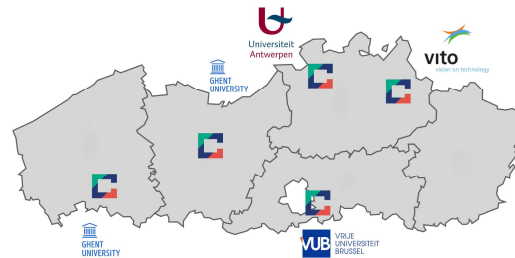
**CAPTURE** is a **platform initiative** that operates a physical and virtual place to help researchers and companies to co-create and interact with each other and exchange values under **three pipelines**.





# CAPTURE

Powered by



3 Pipelines

14 Programs

>60 research group leaders

>45 research groups

>300 researchers involved

2 business platforms

>25 business members

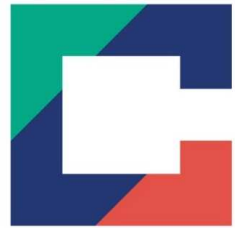
>100 companies we work with

11 staff members

22 supporting members

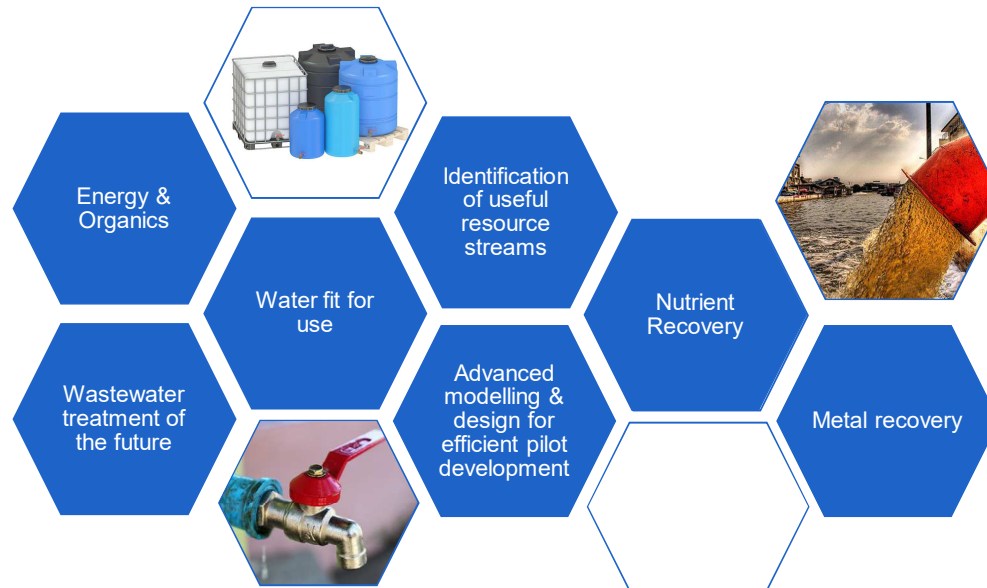
6 business developers



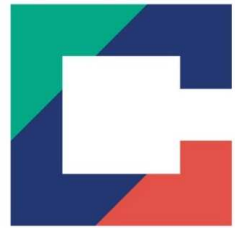


# CAPTURE

## WATER 'FIT-FOR-USE'



SMART WATER (RE-)USE IN SELECTED DOMAINS



# CAPTURE

WATER 'FIT-FOR-USE'







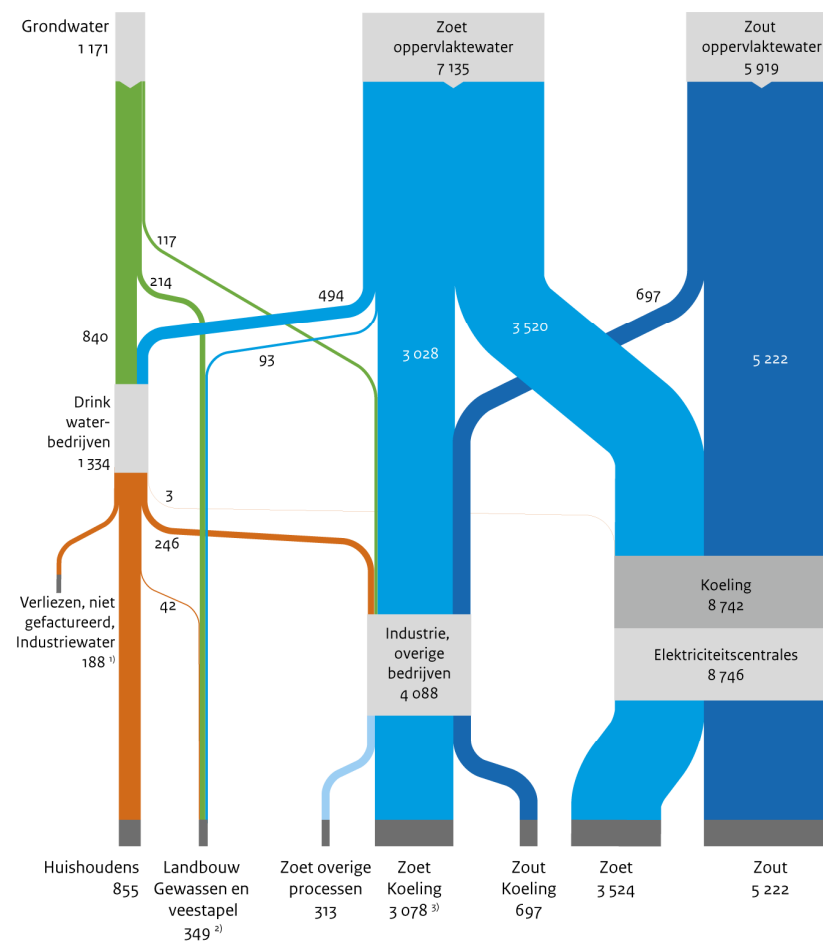






## Winning en gebruik van water 2020

Eenheid: miljoen m<sup>3</sup>



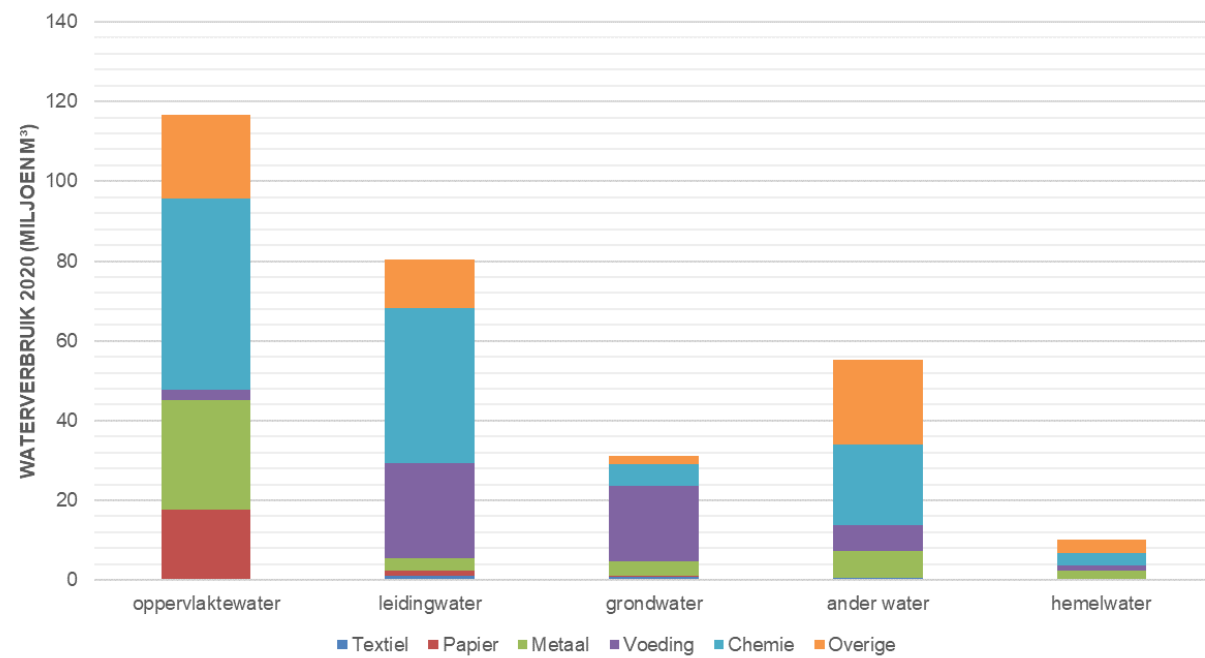
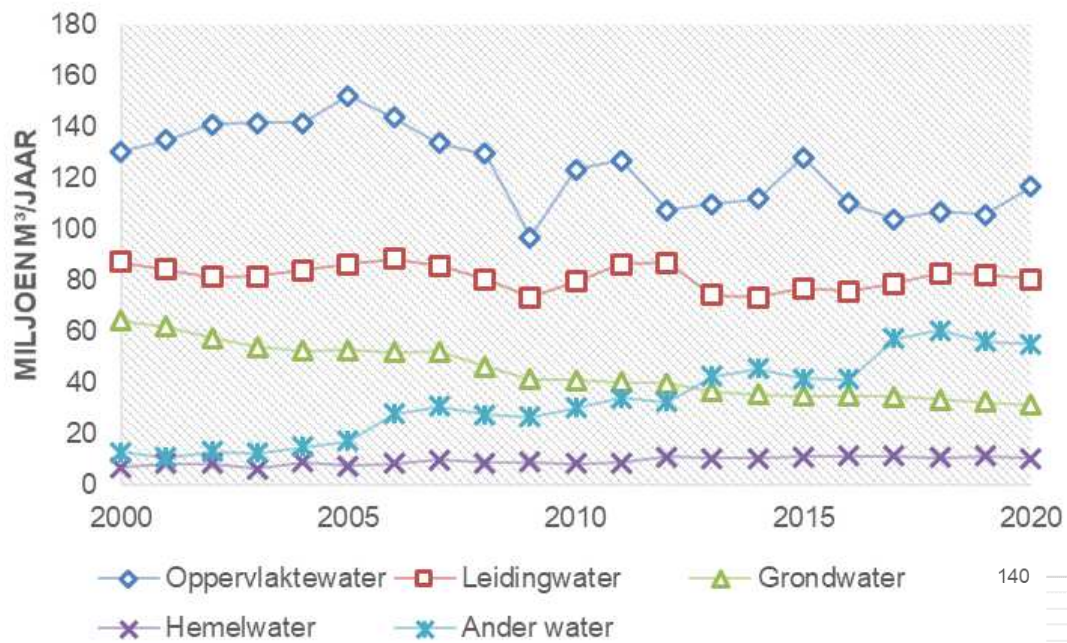
<sup>1)</sup> – Productieverliezen

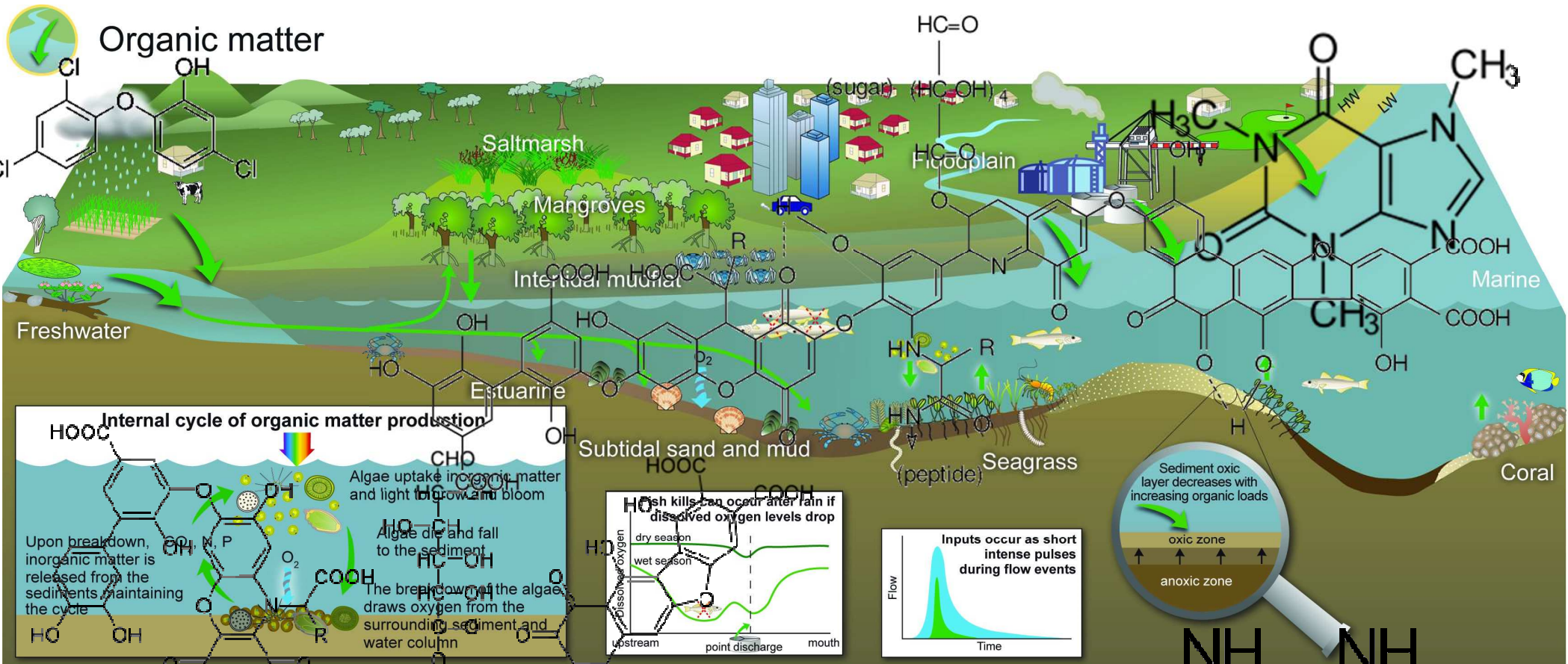
– Niet gefactureerd

– industriewater -> dochterbedrijven











<sup>2)</sup> Exclusief het grote volume van de opname van bodemwater door gewassen. Orde grootte 15 miljard m<sup>3</sup> (met name landbouw).

<sup>3)</sup> Afkomstig uit oppervlaktewater (3028 mln m<sup>3</sup>) en grondwater (50 mln m<sup>3</sup>).

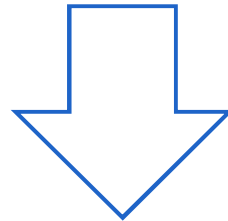




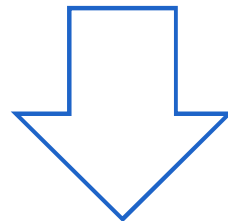
**Legend:**

-  Organic matter enters from diffuse land (  ), urban (  ) (e.g. stormwater), upstream aquatic (e.g. aquatic weeds (  )) and point discharge (  ) (e.g. sewage overflow and intensive animal production (e.g. dairy, feed lot)) sources
-  Internal production of organic matter from aquatic plants (  ) and phytoplankton (  ) occurs within the system
-  The breakdown of organic matter can result in low dissolved oxygen (i.e. hypoxia or anoxia) in the water which can cause mass mortality events
-  Sediment oxygen demand is higher when production is higher

Wat is het effect op waterkwaliteit?

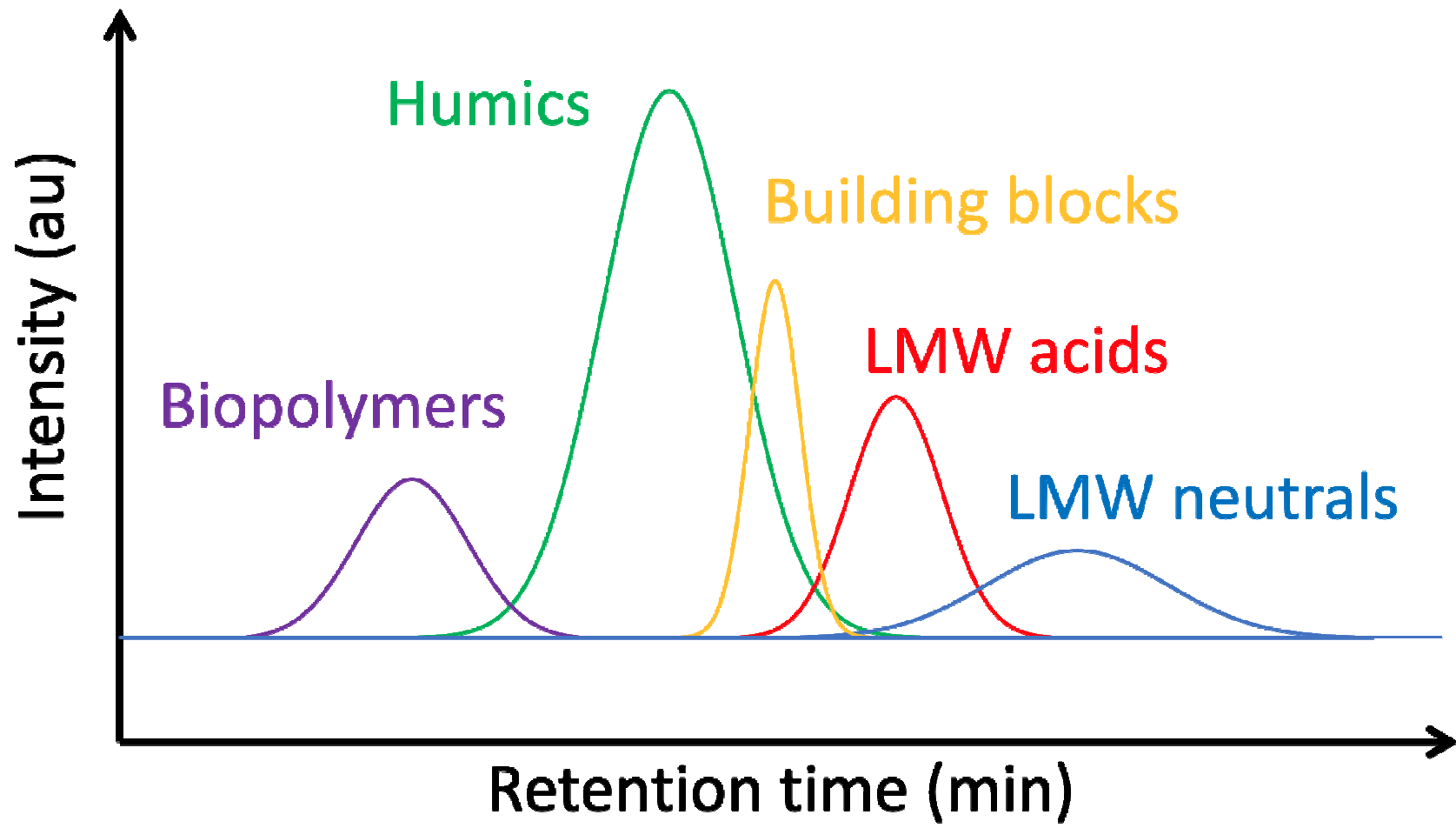


Wat is het effect op behandelingstechnieken?



Welke organica hebben welk effect?





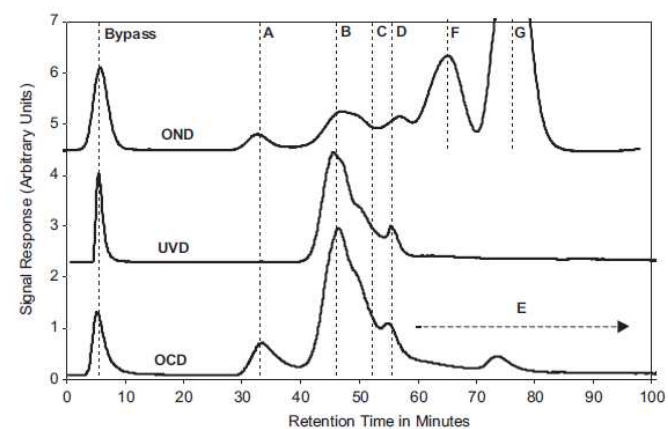
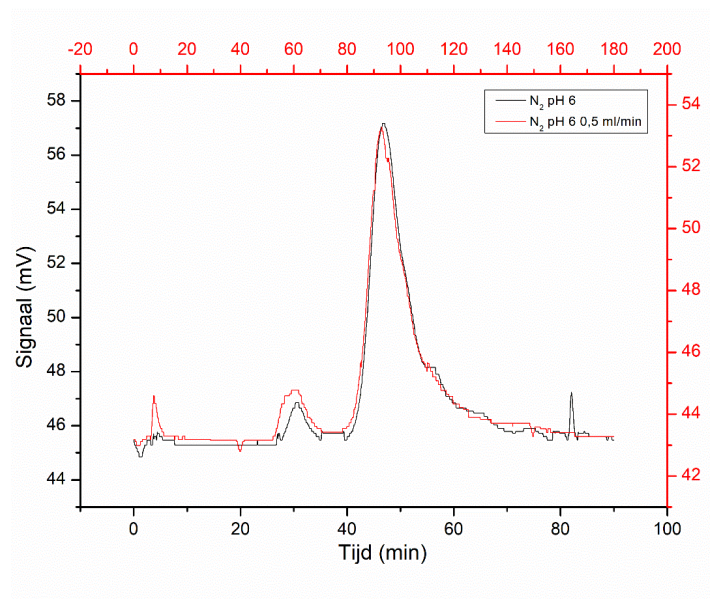
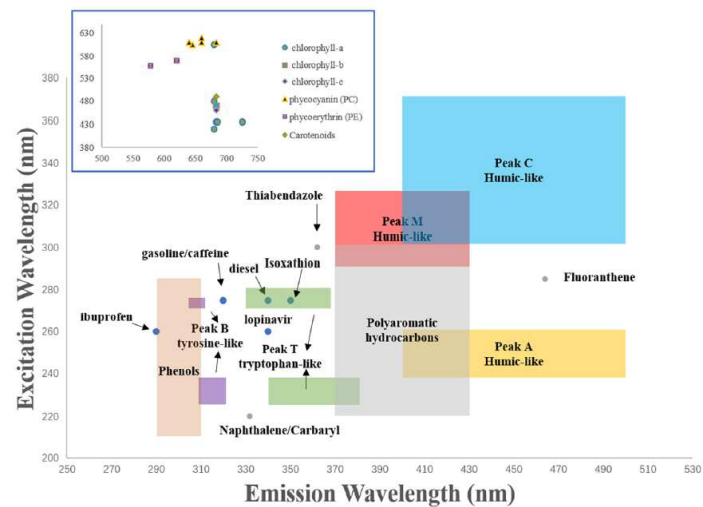
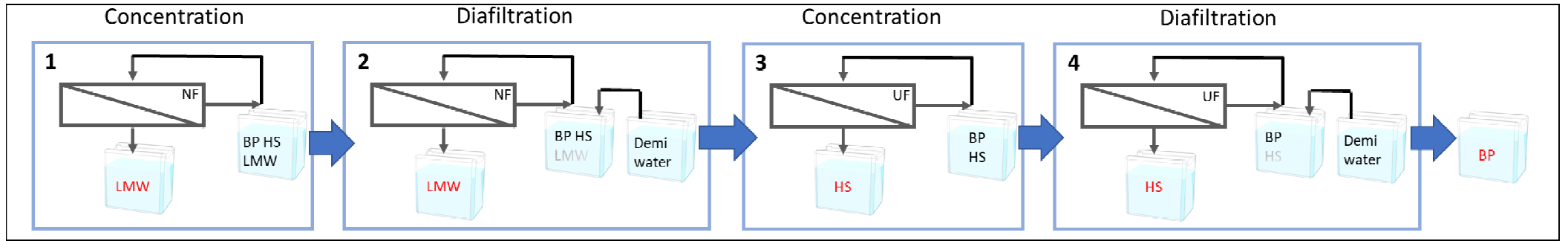


Fig. 2 – SEC-OCD chromatogram of a surface water (River Pfinz, Karlsruhe, Germany) with responses for organic carbon detection (OCD), UV-detection at 254 nm (UVD) and organic nitrogen detection (OND). Arbitrary assignment of fractions A–G prior to data processing.

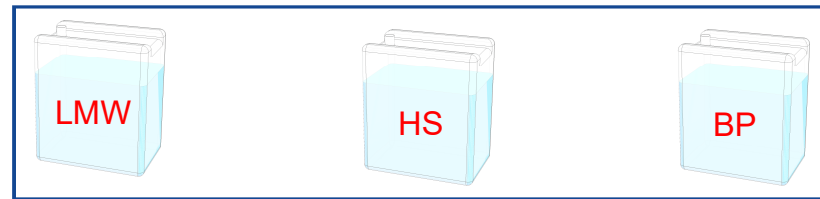
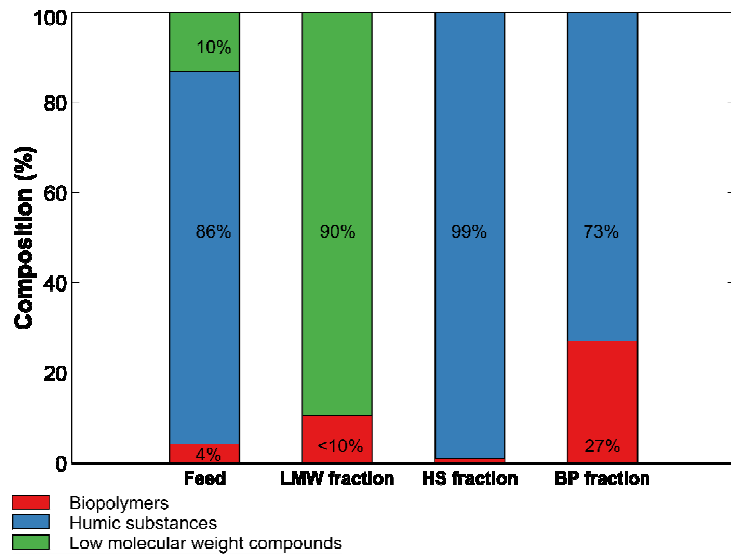
FEEM

HPSEC-TOC

LC-OCD



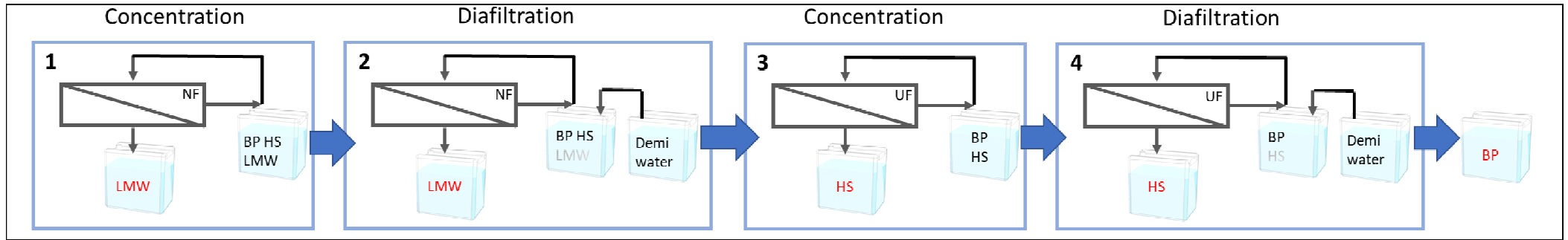
BP = biopolymers, HS = Humic substances, LMW = low molecular weight compounds



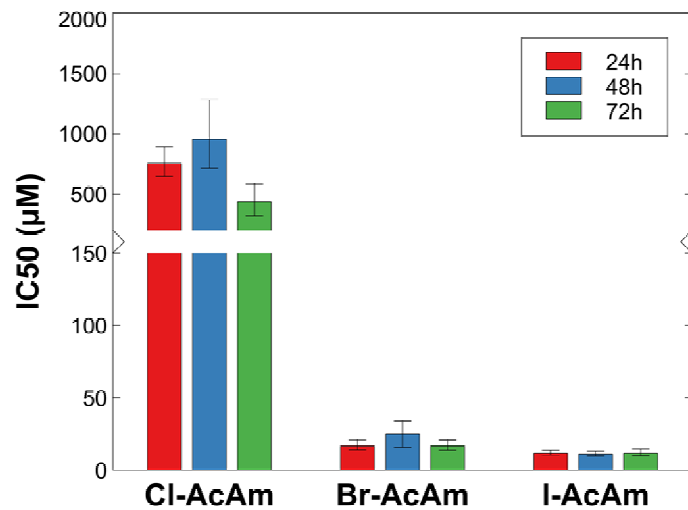
Desinfection

DBP formation & toxicity?

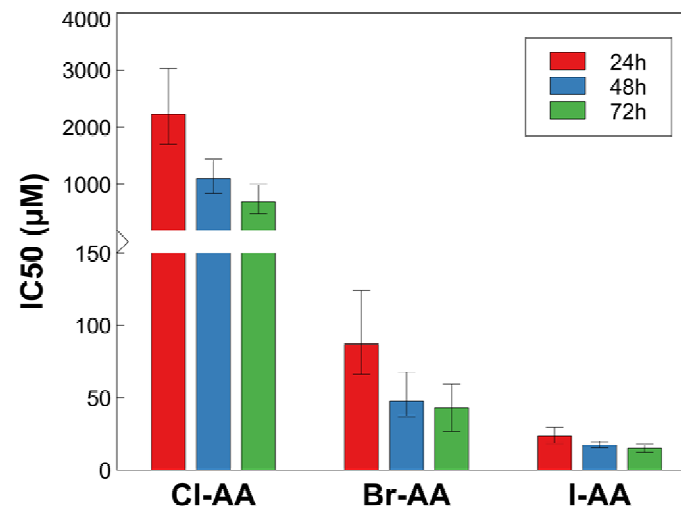




### *Haloacetamides (unregulated)*



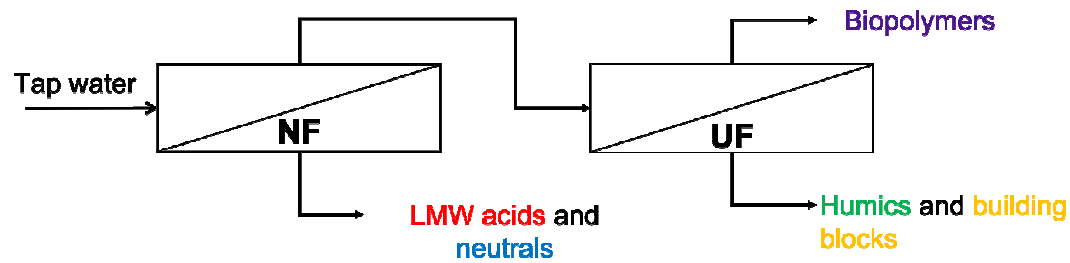
### *Haloacetic acids (regulated)*



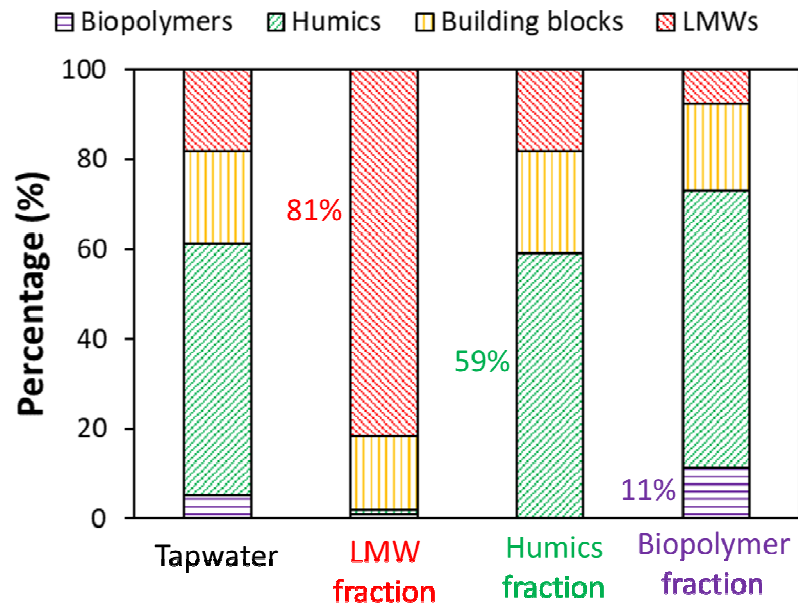
I-DBP > Br-DBP > CI-DBP  
 HAcAm > HAA





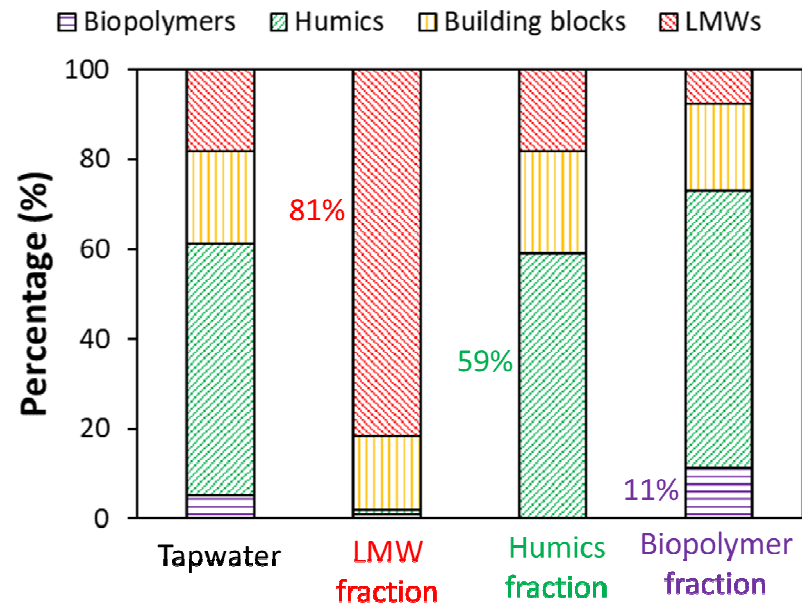


Relative composition fractions



Drinking water

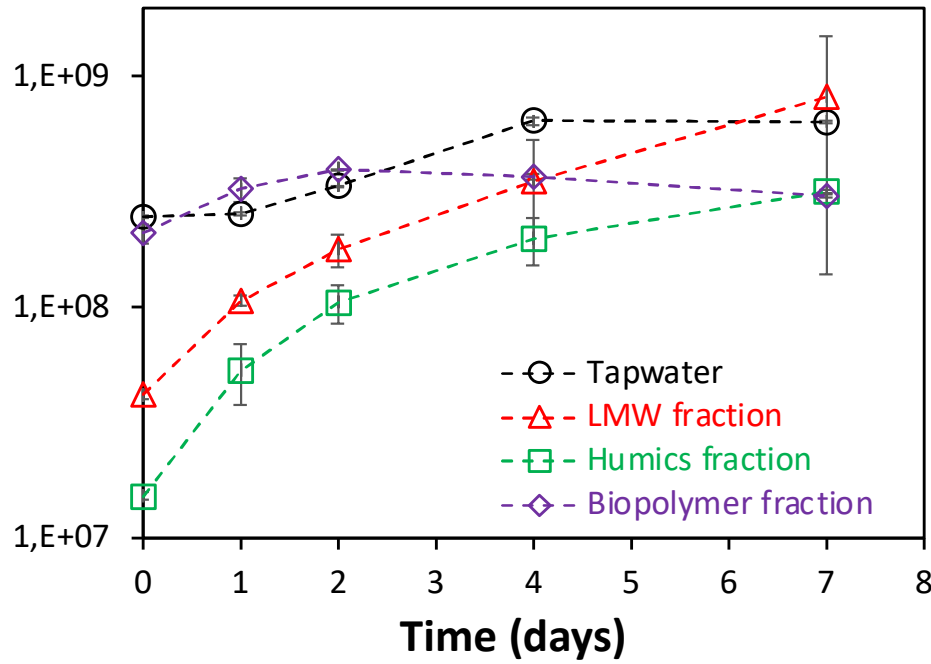
Relative composition fractions



Ground water

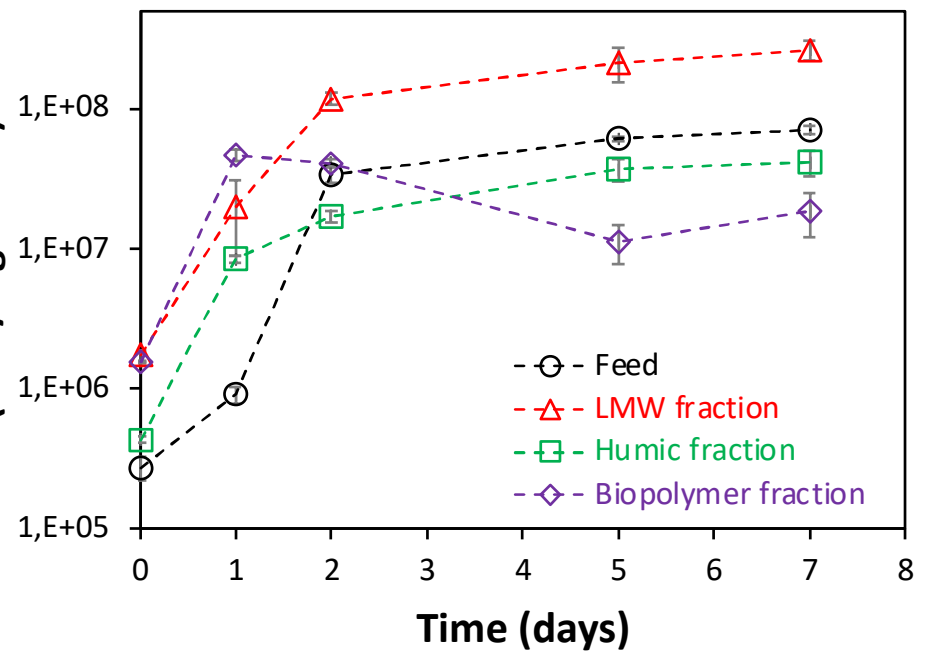


Specific cell concentration  
(cells/mg NPOC)



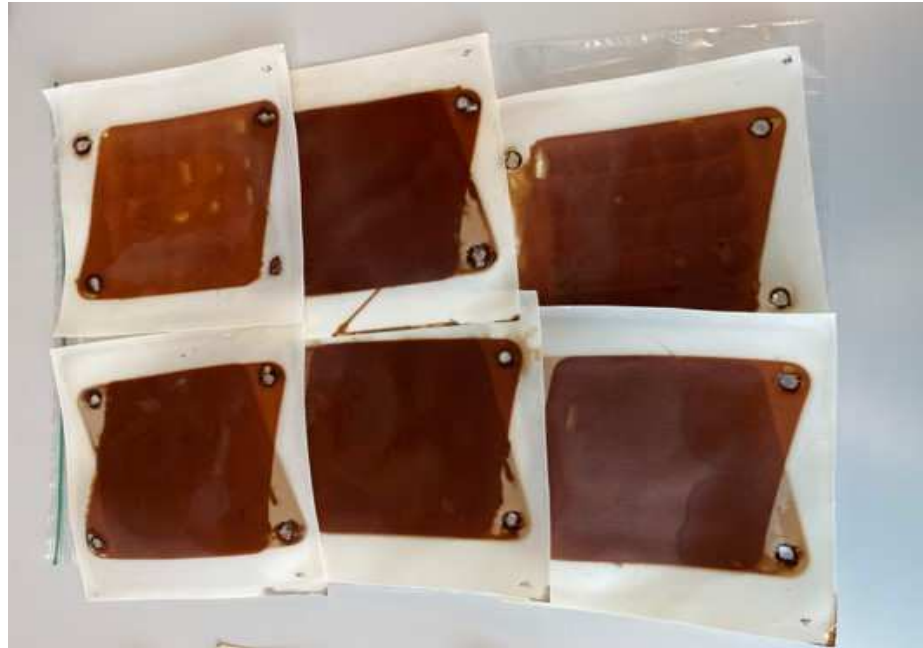
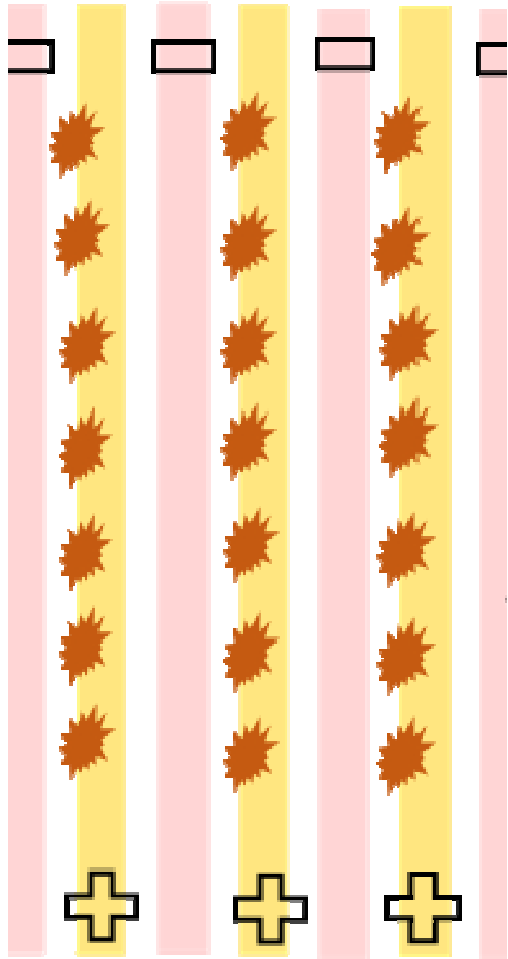
Drinking water

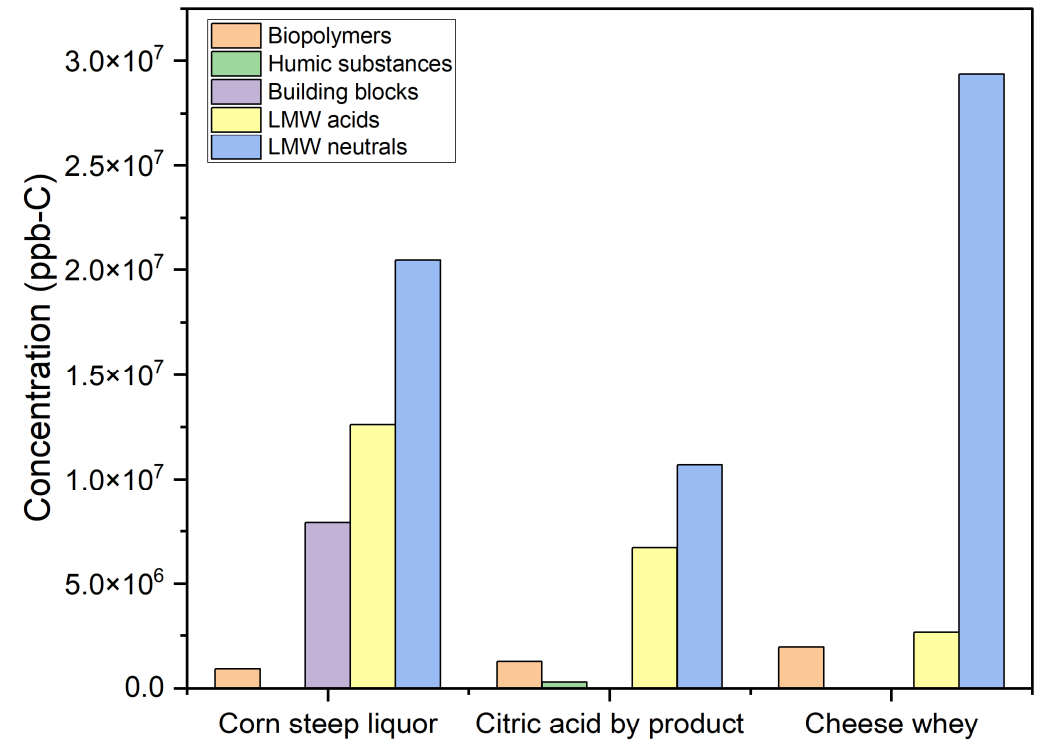
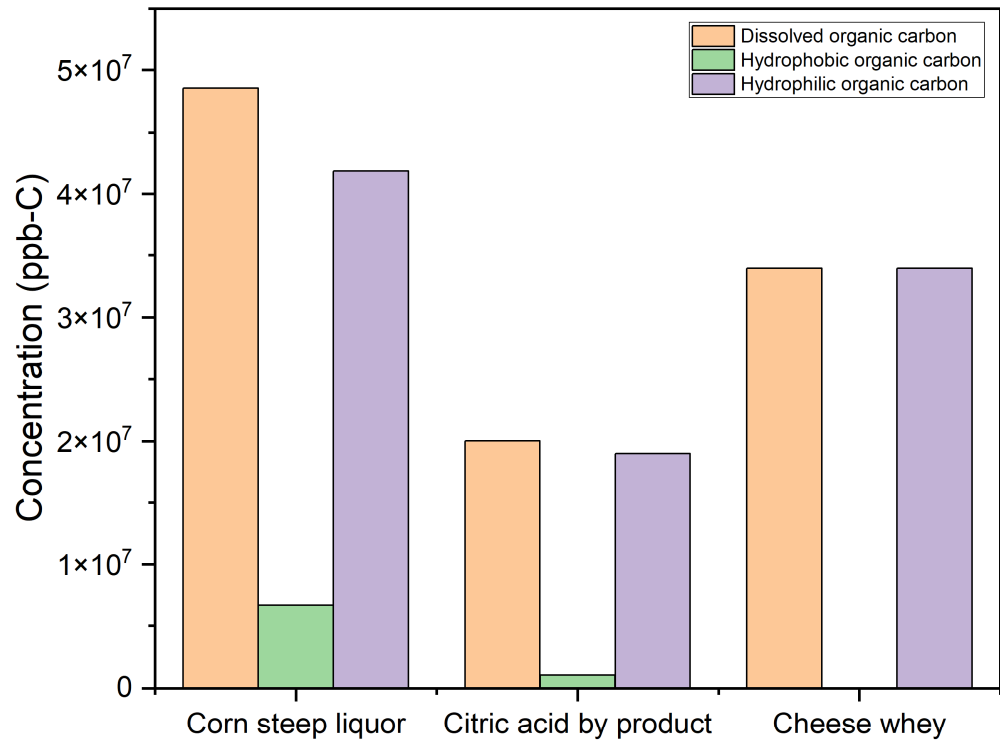
Specific cell concentration  
(cells/mg NPOC)



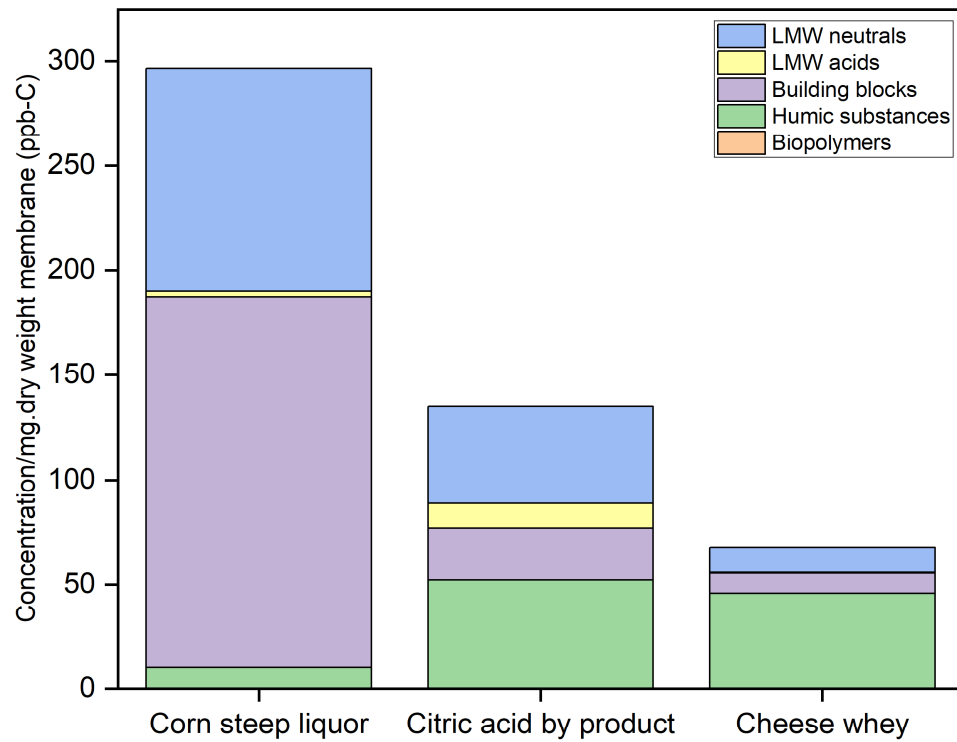
Ground water



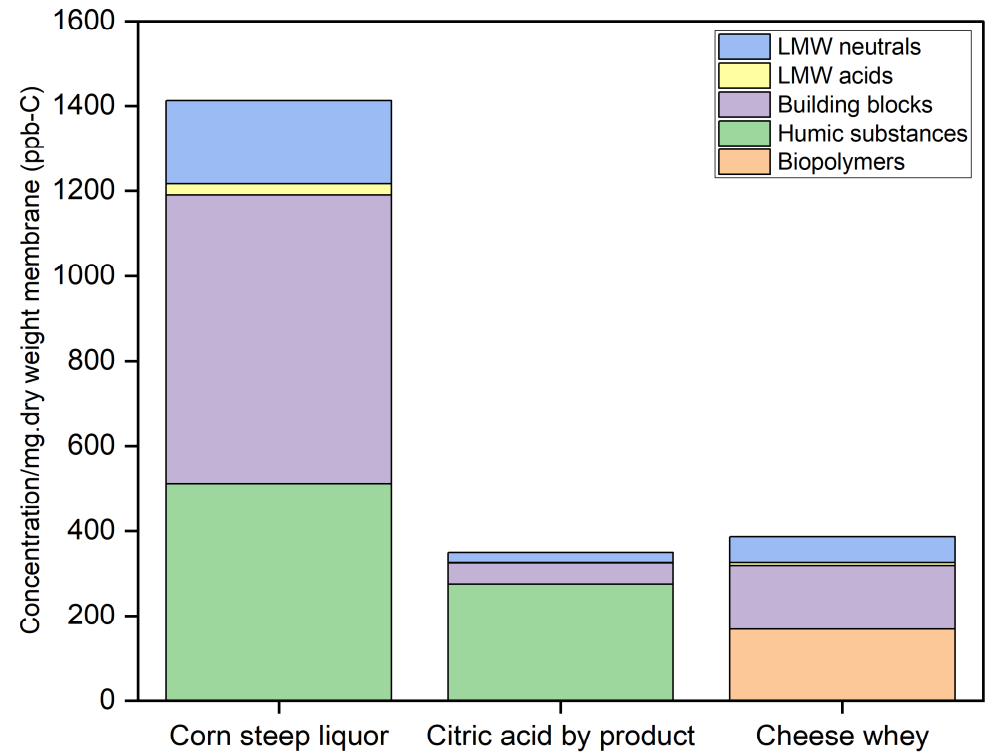








**Homogeen membraan**



**Heterogeen membraan**



## Te onthouden

- Onderschat de samenstelling van de organica in het water niet
- Technieken voor organica karakterisatie zijn breed toepasbaar

## Marjolein Vanoppen

Chair Industrial and Circular Water Technology

UGENT/CAPTURE

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[www.ugent.be](http://www.ugent.be)