Detection of small organics in water
the MUSE project

Frøhling, Kasper Bayer

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Detection of small organics in water

- the MUSE project

Kasper Bayer Frøhling
PhD student
DTU Nanotech
Motivation - water quality

17β-estradiol (E2)

Diclofenac

The DVD/Blu-ray setup

Platform

Sampling

Sensing
Raman Spectroscopy
Hotspot explanation

![Diagram of a nanoparticle with enhancement factors labeled.](image)

Surface-Enhanced Raman Spectroscopy (SERS)

Nanoparticles
Our SERS Substrate

![SEM Image of SERS Substrate](image1)

![Image of Rice Field](image2)

![SEM Image of SERS Substrate](image3)

![Image of Clover Field](image4)

200 nm
Our SERS Substrate
SERS Detection
SERS Detection

Inside droplet

Outside droplet

1 µm
Capturing the Target

Ag/Au SERS  DNA aptamer  17β-estradiol

Intensity vs. Raman shift

200 nm
Magnetic Nanoparticles

Brownian relaxation = physical rotation of the particle
Magnetic Nanoparticles
Magnetic Nanoparticles
Work in progress