

EXTERNAL SEMINAR

AARHUS UNIVERSITY

DEPARTMENT OF ENVIRONMENTAL SCIENCE

FREDERIKSBORGVEJ 399, 4000 ROSKILDE

19. DECEMBER, 13.30-14.30

Venue: The Pavilion, Department of Environmental Science

Title: Whole-Cell Imprinting in Sol-gel Materials (Macromolecular Fingerprinting) for Rapid Bacterial Recognition in Water Samples via Quartz Crystal Microbalance (QCM) Detection

Or

How to make chocolate chips cookies!

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Abstract

Detecting cells and microorganisms in different matrices is becoming an increasingly important task in a variety of fields (medicine, food, environment, etc.). Sol-gel derived thin films, molecularly imprinted with different bacterial cells had been previously showed to be an easy and selective method for specific bacterial recognition from water samples. An important feature of the imprinting process is the molecular fingerprints created by microorganisms along with morphology, into imprinted film cavities that are complementary to the template molecule in size, shape, and functionality. The resulting imprinted film cavities can then “remember” (i.e., selectively bind) environmental bacteria to be identified.

In the present research, a method for rapid and selective bacterial recognition was developed by quartz crystal microbalance (QCM) based biosensor. Bacteria such as: *Staphylococcus epidermidis*, *Deinococcus radiodurans*, *E.coli*, *Pseudomonas aeruginosa*, and *Flavobacterium breve* were successfully detected in real time. This study presents a multidisciplinary approach to achieve a highly sensitive QCM based biosensor.

*Dr. Lora Parhovnik (was a Ph.D. student in Prof. Robert Armon laboratory)

Host: Head of the Department Carsten Suhr Jacobsen



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