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A WHOLE-CELL BIOSENSOR PLATFORM AND ITS APPLICATIONS IN ASSESSING ENVIRONMENTAL POLLUTION

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Project Summary: Biosensors are versatile tools to address various analytical questions. To date, developed systems have only found application confined within biological laboratories. The main idea of this project is to create a material platform potentially enabling field use. As a proof of concept, a *Bacillus subtilis*-based biosensor platform for the diffusion-based quantification of a small molecule analyte is presented. Aspects such as scalable production at marginal cost per sensor and storage stability are discussed. Subsequently, an application of the biosensor platform with a different organism, *S. cerevisiae*, employed as a sensor strain is presented. The system is envisioned to act as a first level bioactivity screen for estradiol in aqueous sample matrices. Combining cells and the material platform, the challenge of storage is addressed and advances towards using smartphones to replace expensive and bulky laboratory equipment in remote and resource-limited settings are presented.

CV: Nadine received her BSc and MSc in Biotechnology from ETH Zurich in 2014 and 2016. In November 2016, she started her doctoral studies in the Functional Materials Laboratory under the supervision of Prof. Dr. Wendelin Jan Stark.