



University  
of Basel

Department of  
Biomedical Engineering



Seminar Series:

## Latest Breakthroughs in Biomedical Engineering Research

Location: DBE Science Lounge, Hegenheimermattweg 167C, 4123 Allschwil

Date & Time: Thursday 17.10.2024 | 15:30 – 16:30

Host: Prof. Pablo Sinues

# Monitoring Health by Breath Analysis with Tiny Molecular Sensors

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## Abstract

Digital healthcare is promising both for diagnostics and disease management by focusing on the continuous and remote monitoring of physiological and behavioral parameters in community and home settings. Wearable technologies and smart devices based on molecular sensors that analyze non-conventional body fluids (e.g., exhaled breath) at minimal invasiveness are needed to provide longitudinal biomarker information. Here, I will discuss recent progress on the design of compact breath sensors capable of quantifying trace-level biomarkers at high accuracy within few seconds. To demonstrate the immediate practical impact, I will highlight several showcases: (1) continuous sensing of breath acetone in health and diabetes that is currently evaluated in clinical trials, the detection of toxic methanol in breath and the dynamic tracing of isoprene during physical activity.

## Biosketch

Andreas Güntner is an Assistant Professor of Molecular Sensing at ETH Zürich and a Research Associate at the University Hospital Zürich. He has published ca. 50 original research articles in leading journals (e.g. Nature Food, Nature Commun., Advanced Materials, Angew. Chemie, Advanced Science) and has been recognized by several awards, including ERC Starting Grant and the Emerging Technology Award by the Royal Society of Chemistry. He has also entrepreneurial and industry experience, as he served as CEO and co-founder of Alivion AG that has successfully commercialized the first handheld methanol detector with clients on five continents in the food, oil & gas, health and transportation industries.