



University
of Basel

Department of
Biomedical Engineering



Selected research topics in Biomedical Engineering:

The Future of Personalized Medicine: 3D Printing and Patient-Specific Technologies

Location: Biozentrum, Spitalstrasse 41, Basel, Seminar Room U1.197

Date & Time: Monday 11.03.2024 11:15 – 13:00

Disposable sensors for next-generation diagnostics

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Abstract

Disposable sensors are low-cost and easy-to-handle sensing devices for short-term or single-shot measurements. Over the last decade, they have become increasingly important for medical applications, especially for the point-of-care and wearable diagnostics. In this talk, first a brief introduction to disposable sensors will be given. Afterwards, different biosensing approaches, developed in my research group, for next-generation diagnostics will be presented: (i) Multiplexed on-site therapeutic drug monitoring of antibiotics from invasive and non-invasive samples toward personalized antibiotherapy, (ii) CRISPR-powered electrochemical biosensors for target amplification-free, simultaneous and on-site detection of multiple nucleic acids and other (bio)molecules (such as proteins or drugs) for the management of infectious diseases, (iii) wearable microfluidic immunosensing devices for lab-on-a-bird applications and beyond, (iv) low-cost electrochemical paper-based wearable sensors that can be integrated to any type of facemask for wearable and continuous monitoring of breath biochemistry and/or testing of the infectious diseases such as coronaviruses from exhaled breath, and (v) light-controlled dynamic bioassays using optogenetic switches (OptoAssays) for wash- and pump-free point-of-care diagnostics.

Biosketch

Dr. Can Dincer is currently junior research group leader at FIT & IMTEK of the University of Freiburg. The main research interest of his group "Disposable Microsystems" is the development of bioanalytical materials/sensors/microsystems and their combination with data science and artificial intelligence for various applications including diagnostics, especially for point-of-care diagnostics and wearables. Since September 2019, he is an Associate Editor of the journal "Biosensors and Bioelectronics" (Elsevier). In 2022, Dr. Dincer also joined to the International Advisory Board of the journal "Advanced Sensor Research" (Wiley).