

# Thursday seminars

*Taking a Look at the Future:  
a cocktail hour event!*



**IMTEK**  
DEPARTMENT OF  
MICROSYSTEMS ENGINEERING



**Dr.-Ing. Can Dincer**  
(IMTEK & FIT - University of Freiburg)

## Disposable sensors for next- generation diagnostics

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.