

**ICB PhD public presentations****ENZYME-ENABLED DNA  
BIOSENSORS FOR FIELD-  
DEPLOYABLE DIAGNOSTICS****Akkapol Suea-Ngam**

deMello group

Supervisor: Prof. Dr. Andrew deMello

Co-examiners: Prof. Dr. Paolo Arosio and  
Dr. Philip D. Howes**ETH Hönggerberg, 02/09/2020, 12.00 h****Zoom: <https://ethz.zoom.us/j/94192875951>****Meeting ID: 941 9287 5951**

**Project Summary:** Field-deployable diagnostic devices play a vital role in the frontline efforts to curb mortality and morbidity of infectious disease. Having inexpensive, rapid, disposable, and effective diagnostic tools is a must. In this PhD project, DNA was chosen as an inexpensive bio-recognition element that enables highly selective and sensitive sensing. Further, enzymes were utilized to assist in various detection scenarios, allowing simple DNA manipulation with ready signal readout. Within an hour, these enzyme-assisted DNA biosensors enable ultra-sensitive detections of mycotoxins and drug-resistant genes on disposable platforms, i.e. paper-based devices and screen-printed electrodes, down to pg/mL and single-molecule levels, respectively. These methods hold great promise for tailor-made disease and toxin kits in nearly future.

**CV:** Akkapol is from Bangkok, Thailand. He completed his undergraduate and Master's degrees in Analytical Chemistry at Chulalongkorn University, having also completed a half-year internship in the Furutani group in Okazaki, Japan. Akkapol joined the deMello group in 2016 as the recipient of a Swiss Government Excellence Scholarship. He has experience in developing electrochemical and colorimetric sensors.