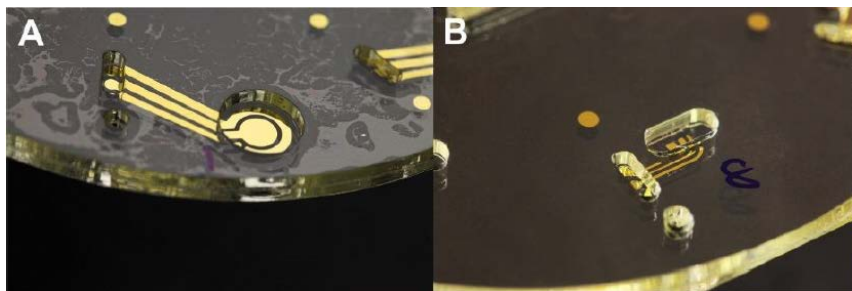


Special course / Bachelor / Master project

Fabrication of electrochemical sensors for centrifugal microfluidics



Centrifugal microfluidic devices also known as Lab-on-disc (LoD) platform, enables rapid assays in field forward settings. LoD platform requires simple equipment, such a rotating motor for sample preparation and actuation of fluidic within the disc via centrifugal forces. Moreover, this platform gives greater flexibility in embedding different sensors based on the chosen application.

Among several sensing options, Electrochemical sensing is especially convenient for microfluidic integration. Electrochemical sensor (electrodes) can be easily miniaturized and multiplexed without compromising sensing performance [1]. One of the major bottlenecks in the performance of electrochemical sensors in the LoD platform is the fabrication of stable reference electrodes.

Aim of the project

In this project, we will make early attempts to develop a new rapid fabrication method for sensing electrodes and reference electrode in the LoD platform. The participating student can 1) fabricate carbon electrodes and reference electrode via screen-printing and/or alternate methods; and 2) assess the electrochemical performance of the sensors via electrochemical techniques such as cyclic voltammetry, square-wave voltammetry, and amperometry.

References

[1] Rajendran, S. T. et al. Anal. Chem. 2019, 91 (18), 11620–11628.

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About IDUN

IDUN is a center of excellence funded by the Danish National Research Foundation and the Villum Foundation. The center is divided into two parts: IDUN Drug and IDUN Sensor, focusing on drug delivery and nanomechanical sensors, respectively.