

# **(MEP) Biomolecule sensing using gold-deposited microfluidics**

## **Scheme**

Experimental

## **Project**

The accurate and sensitive detection of bio-based molecules / living matters is crucial to our society, as evidenced in our current pandemic. Among many queueing issues, endotoxin detection is particularly critical as it is not only an indicator towards presence of gram-negative bacteria but also extremely toxic to humans. This biomolecule is often identified among the deadliest cause of surgical sepsis and food poisoning. As such, tremendous interest has been amassed to find a way to detect and quantify it in an efficient manner.

Our group has developed a new technique of depositing gold nanoparticle inside microfluidics, with the purpose of biosensing. When this sensor is used to detect the endotoxin, current preliminary result shows positive optical shift, indicating promising wearable and industrial applications.

This MEP would aim to develop this sensor using atomic layer deposition. The sensor would then be characterized and used to detect various endotoxins to evaluate its sensitivity, specificity, robustness, and feasibility.

## **What's in for you**

This thesis project allows you to not only get hands-on experience on several coolest techniques in nano and microfabrication, but also to manoeuvre at the interface of biology and chemical engineering. You also get to see the real practice of transport phenomena and reaction, especially in the field of nanotechnology and molecular sensing.

## **Requirement**

Good knowledge in transport phenomena and bio-sensing helps tremendously while previous experience in surface deposition, microfluidics, nanotechnology and/or biomolecule handling are preferred.

## **Contact**

If you are interested, please contact Albert ([a.santoso@tudelft.nl](mailto:a.santoso@tudelft.nl)), Pancheng (P.Zhu-3@tudelft.nl), and/or Alina (a.y.rwei@tudelft.nl).