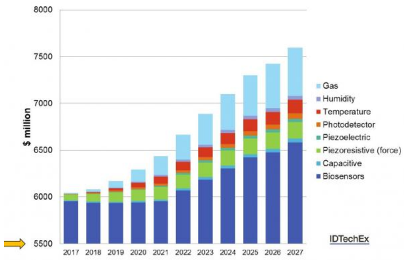
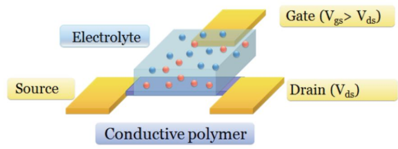
Personalized cosmetics: a low-hanging fruit for printed biosensors: Page 3 of 4

April 10, 2018 // By Julien Happich



Although AFELIM members gathered in Paris under the general theme "printed sensors", the focus was clearly on biosensors during the "Rencontres électronique imprimée".

Other promising printed biosensors include Electrolyte-Gated Organic Field-Effect Transistors (EGOFETs) and Organic Electro-Chemical Transistors (OECT), as presented by Benoît Piro and Vincent Noël, both researchers at the Université Paris Diderot ITODYS lab. Although their operating mechanisms are different, both organic transistors present a similar layout that is very simple to print out, consisting of three PEDOT:PSS electrodes (source, drain and gate made) and two conductive layers including an electrolyte and an organic semiconducting polymer.



Conceptual illustration of an Electrolyte-Gated Organic Field-Effect Transistors (EGOFET).

For the OECT, as an enzyme-based analyte indirectly transfers an electron to the gate, the organic semiconductor is reduced which decreases its conductivity and lowers the detected drain-source current. For the EGOFET, polarizing the gate generates an accumulation of ions at the gate/electrolyte and semiconductor/electrolyte interfaces, creating a charge accumulation in the organic semiconductor. For a p-type semiconductor, this leads to a conductive channel when V_{GS} is negative. Both implementations operate under 1V to detect target analytes.

In the second part of their joint presentation, Vincent Noël focused on the emerging markets for printed biosensors, highlighting two large but very differently regulated fields of application, health and cosmetics.

previous 1 2 3 4 next

s