

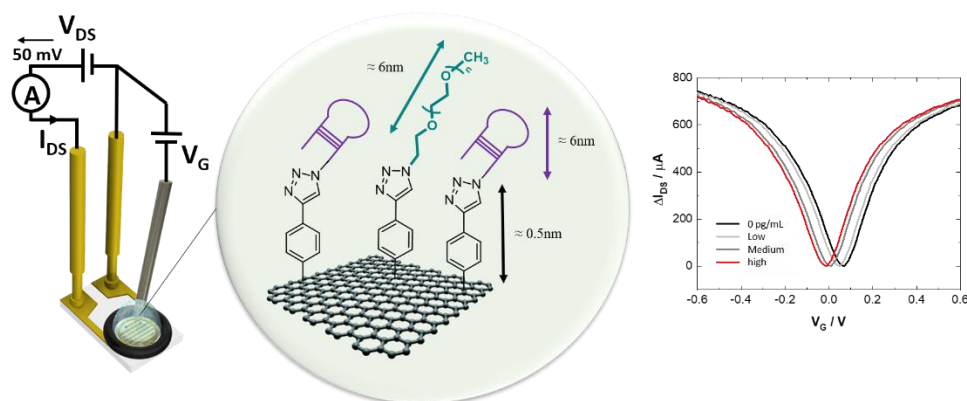
## Graphene-based field effect transistor: differentiation between mild-moderate-severe myocardial injury

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Cardiovascular diseases result in millions of deaths around the globe, many of which could have been avoided if identified at an early stage. Preventive cardiovascular disease diagnostics plays a vital role reducing the critical fatality rate by allowing to take timely necessary precautions. In this talk I want to outline the different approaches taken over the years to obtain sensitive point-of-care sensing devices. I will focus on some of our recent works on cardiac troponin I (cTnI) aptamer modified graphene-based FETs (GFETs) for cTnI sensing. The importance of adapted surface chemistry approaches to anchor the aptamer on the GFET will be discussed in details. The sensor performances within the clinical important window of 10 to 500  $\text{pg mL}^{-1}$ , allowing the differentiation between healthy, and people with low and high risk for myocardial infarction (AMI) will be presented.



**Figure 1.** Concept of electrical aptamer sensor for sensing of cTnI in PBS and serum using CVD graphene as a channel material I

### References

[1] Teresa Rodrigues, Vladyslav Mishyn, Yann R. Leroux, Laura Butruille, Eloise Woitrain, Alexandre Barras, Patrik Aspermaier, Henri Happy, Christoph Kleber, Rabah Boukherroub, David Montaigne, Wolfgang Knoll, Sabine Szunerits, *Nano Today* **2022**, 43, 101391, pg-pg.

[2] Vladyslav Mishyn, Teresa Rodrigues, Yann R. Leroux, Patrik Aspermaier, Henri Happy, Johannes Binting, Christophe. Kleber, Rabah Boukherroub, Wolfgang. Knoll, Sabine Szunerits, *Nanoscale Horizon*, **2021**, 6, 819-829