Graphene oxide based materials for electrochemical (bio)sensing

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Non-invasive sensors, which accurately measure biomarkers in biological fluids, allow for a more personalized approach to fitness goals and to health monitoring. They define the levels of many chemical parameters through portable devices, which can be used far from equipped laboratory centers and by untrained personnel. The opportunity to develop even wearable sensors, with wireless connectivity, represents the next generation of integrated lab-on-chip technology. In this talk we will discuss the advantages of using graphene oxide (GO) as the sensing element of these detection systems. In particular, the talk will take into account the development of sensors for the detection of lactate and glucose, which are biomarkers of a physical exercise, and for the detection of drugs of abuse in urine samples [1].

The physico-chemical properties of both pristine and chemically functionalized GO in the detection of the target analyte were studied combining the results coming from electrochemical, spectroscopic and morphologic measurements [2]. This approach allowed us to obtain useful information for the further improvement of the analytical performances of the devices.

References

[1] G. Maccaferri, F. Terzi, Z. Xia, F. Vulcano, A. Liscio, V. Palermo, C. Zanardi, Sens. Act. B, 281 (2019) 739.
[2] G. Maccaferri, C. Zanardi, Z. Xia, A. Kovtun, A. Liscio, F. Terzi, V. Palermo, R. Seeber, Carbon 120 (2017) 165.