

Detection of a protein biomarker with an inkjet-printed nanobiosensor

Massimo Urban¹⁺

Giulio Rosati¹⁺, Lei Zhao¹, Qiuyue Yang¹, Cecilia de Carvalho Castro e Silva^{1,2}, Stefano Bonaldo³, Claudio Parolo¹, Emily P. Nguyen¹, Gabriel Ortega⁴, Paolo Fornasiero⁵, Alessandro Paccagnella³, Arben Merkoçi^{1,6*}

¹ Institut Català de Nanociència i Nanotecnologia (ICN2), Campus UAB, Bellaterra, 08193 Barcelona, Spain

² MackGrappe—Mackenzie Institute for Research in Graphene and Nanotechnologies, Mackenzie Presbyterian University, São Paulo 01302-907, Brazil

³ Department of Information engineering, University of Padova, Padova, Italy

⁴ Department of Chemistry and Biochemistry, University of California, Santa Barbara, USA

⁵ Department of Chemical and Pharmaceutical Sciences, University of Trieste, Trieste, Italy

⁶ Catalan Institution for research and Advanced Studies (ICREA), Barcelona, Spain

*These authors equally contributed to this publication

arben.merkoçi@icn2.cat

The importance of novel protein biomarkers for monitoring and early-diagnosis of the associated diseases is a critical point in the biomedical field [1]. The evolution of some of these diseases is rapid, and they can lead to severe conditions if not adequately monitored [2]. For this reason, an efficient, reliable Point-of-Care (PoC) device for homecare detection and preventive diagnosis is needed [3]. Inkjet printing has been investigated as an alternative for mass-production of PoC biosensors, due to its versatility and excellent performances [4]. This technique allows the production of low-cost, high-performance nanobiosensors, that can be tailored toward the specific application needed. In this work, we present a fabrication method for disposable, inkjet-printed nanobiosensor with smartphone readout. Electrochemical impedance spectroscopy (EIS) has been used to characterize the general performance of the device and to optimize its fabrication. The system has been tested for the detection of a protein biomarker in different media showing the potentiality of this technique in the biosensing field and opens the doors to multiple other applications using inkjet technology for diagnosis at the PoC.

References

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