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ABSTRACT:

Biomolecular impedimetric fingerprints utilizing drop-casted, functionalized nanoparticles on rapidly manufactured substrates

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The following talk will be dedicated to introducing the development in a novel approach to modus operandi of electrochemical biosensors. By implementing a real-time impedimetric monitoring under various electric field and combined with statistical data analysis tools we obtain full impedance characteristics constituting an explicit fingerprint of the macromolecular interactions [1,2]. This measurement methodology, multiparametric impedance discriminant analysis (MIDA), processes large amounts of generated impedimetric data and brings information on most effective measurement conditions (DC polarization, AC amplitude, frequency range, etc.). The proposed approach neglects some of affinity biosensors reproducibility issues, typically induced by non-specific adsorption and fouling.

MIDA may be effectively performed on any electrode substrate, incuding carbon-based substrates fabricated with additive manufacturing [3], offset printing [4] or laser-induced graphitization [5]. The electrocatalytic response of these electrodes may be further boosted by simple drop-casting approach [6]. Combination of the following factors lays the foundations for rapid manufacturable electrode architectures, which are easy to functionalize on demand to tailor electrochemical biosensors.

References:
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