

## **Alternative technologies to enable research in electroanalytical**

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**Abstract:** Notably, the electrochemical approaches have been very useful in the modern miniaturized analytical process involving microfluidic technologies. However, because of the miniaturization requirements, the detection system and its integration into the microchannel is still a big challenge and one of the most critical part of the microfluidic chip platforms. Likewise, the commonly techniques used to fabricate microfluidic devices are not accessible, high cost and not scalable to high manufacturing processes. Our attention is focused on the recent advances, opportunities and challenges towards the development of alternative technologies to enable research in electroanalytical by exploring low cost materials to fabricate microfluidic devices as well as new configuration of electrochemical detection systems. Research topics based on uses of readily accessible consumables and inexpensive equipment, including strategies to overcome the challenges regarding the interface between sample preparation and electrochemistry will also be addressed. In such scenarios, new cell configurations — able to perform *in situ* liquid-liquid microextraction, pre-concentration and further electroanalysis — will be explored, showing the determination of organic analytes at trace-level in some samples of socio-environmental interest.

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