Paper-based electrochemical (bio)sensors: where we are and where we are going

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In a recent perspective published on Analytical Chemistry [1]**,** I reported "the tipping points in the roadmap of electrochemical paper-based analytical devices by harnessing the multiple paper characteristics such as cost-effectiveness, widespread accessibility, mechanical strength, porosity, and capability to be easily cut, folded, modified, and assembled. The use of paper in electrochemical devices not only provides additional features to the electrochemical devices such as the environmentally friendless, ease multiplexed analysis, and three tridimensional structures by folding and unfolding operations but has broken down barriers for delivering measurement without (i) addition of reagents, (ii) sample treatment for liquid, aerosol, and solid samples, and (iii) any additional pump for microfluidics". Following this perspective, in this lecture, I will report features the developed multifarious electrochemical devices in my group, outlining the next steps in my roadmap related to the paper-based electrochemical device.

References

[1] F. Arduini, Anal. Chem. 97 (2025) 10126–10138.