

# Paper-based electrochemical (bio)sensors: a new generation of devices with unprecedented features

---

**Fabiana Arduini**

*University of Rome Tor Vergata, via della Ricerca Scientifica, Rome, Italy*

*SENSE4MED, via Bitonto 139, Rome, Italy*

[fabiana.arduini@uniroma2.it](mailto:fabiana.arduini@uniroma2.it)

---

In the field of (bio)sensors, the use of paper has established a new route considering its several features, including its i) capillary-driven flowing pathways avoiding the use of external pumps, ii) capability to work as a reservoir for storing the reagents, delivering a reagent-free analytical tool, iii) capacity to work without sample treatment, i.e. filtration and dilution, iv) flexibility and foldability, boosting the origami configuration easily without any additional device, vi) feature to work as a reactor to synthesized inside nanomaterials by follow a sustainable approach, vii) ability to detect the target analyte not only in solution but also in aerosol and solid samples without any sampling system, and viii) characteristics to design combined hybrid systems to boost easy analysis, overcoming the ongoing limitation using polyester-based printed electrochemical (bio)sensors [1-3].

In this keynote, I will report the last effort in my group to develop ecodesigned printed (bio)sensors with improved analytical features and unprecedented applications, including the ones in collaboration with companies.

## References

[1] F. Arduini, *Current Opinion in Electrochemistry* 2022, 101090.

[2] V. Caratelli, E. Di Meo, N. Colozza, L. Fabiani, L. Fiore, D. Moscone, F. Arduini, *Journal of Materials Chemistry B* 2022, 10, 9021.

[3] S. Cinti, D. Moscone, F. Arduini, *Nature protocols* 2019, 14, 2437.