

NANOBIOSENSORS FOR SAFETY AND SECURITY APPLICATIONS

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There is a high demand to develop innovative and cost effective devices with interest for safety and security applications. The development of such devices is strongly related to new materials and technologies being nanomaterials and nanotechnology of special role. We study how new nanomaterials such as nanoparticles, graphene, nano/micromotors can be integrated in simple sensors thanks to their advantageous properties. Beside plastic platforms physical, chemical and mechanical properties of cellulose in both micro and nanofiber-based networks combined with their abundance in nature or easy to prepare and control procedures are making these materials of great interest while looking for cost-efficient and green alternatives for device production technologies. How to design simple paper-based biosensor architectures? How to tune their analytical performance upon demand? How one can couple nanomaterials such as metallic nanoparticles, quantum dots and even graphene with paper and what is the benefit? How we can make these devices more robust, sensitive and with multiplexing capabilities? Can we bring these low cost and efficient devices to places with low resources, extreme conditions or even at our homes? Which are the perspectives to link these simple platforms and detection technologies with mobile communication? I will try to give responses to these questions through various interesting applications related to bacteria, pesticides and other highly toxic compounds including heavy metals and a highly demanded element such as uranium in waters. The developed devices are based on lateral flow technology and the use of nanoparticles and other nanomaterials as sensitive labels or signal-generation tools.

References

- [1] Authors, Journal, Issue (Year) page (Calibri 11) Indicate references with sequential numbers within [square brackets].
- [2] Authors, Journal, Issue (Year) page (Calibri 11)
- [3] Authors, Journal, Issue (Year) page (Calibri 11)
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