Evolution of Electrochemical Sensors from Macro to Nano

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Chemical sensor development started in the middle of the 20th century. Over time, 20 years ago, they were combined into multisensors. Multisensors are divided into non-specific, *i.e.* qualitative (electronic noses or tongues) or specific, *i.e.* quantitative [1]. Electronic noses and tongues are already used in practice. However, it is not a challenging task to design quantitative sensors, since all the sensors have to be controlled by the same electronic system with different parameters for each sensor.
Initially, multisensors with the controlling part took up half a desk, while now they can be the size of a credit card due to micro- and nanotechnology. Electrochemical sensors are cost-effective and do not require complex sample preparation, especially if the samples are liquid. These sensors are relatively easy to miniaturise [1]. They are particularly necessary for personalised medicine.
Before complex multisensing systems or assays, individual miniaturised electrochemical sensors constructed of conductive polymers and carbon nanoparticles are first tested. Our group is developing microsensors for various analytes such as neurotransmitters (dopamine) [2], glucose [3], pH [4,5], Zn(II) and proteins (gliadin, wound-specific antibodies), *etc*.

References

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