

## Challenges Associated with the Development, Application and Commercialisation of Electroanalytical Sensors

Julie V. Macpherson<sup>1,2</sup>, Zoe J. Ayres,<sup>1</sup> Sam J. Cobb,<sup>1,2</sup> Mark E. Newton<sup>3</sup> and Tania L. Read<sup>1</sup>

<sup>1</sup>Department of Chemistry, University of Warwick, Coventry CV4 7AL, <sup>2</sup>Diamond Science and Technology Centre, University of Warwick, Coventry CV4 7AL, <sup>3</sup>Department of Physics, University of Warwick, Coventry CV4 7AL

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Abstract: There is a plethora of papers in the scientific literature devoted to the development of new materials or methodologies for chemical sensing in solution, based on electrochemical principles. However, the numbers which see the concepts discussed translate into a commercial possibility are incredibly small. Historically, membrane based electrochemical sensors were commercially popular, e.g. the Clark Cell electrode for oxygen detection, however fouling of the membrane and the need to stir the solution, has limited popularity in recent years, with non-electrochemical technology taking the market share. In the electrochemical field boron doped diamond (BDD) electrodes have been discussed frequently as a material that has the potential to outperform other electrodes for chemical sensing, due to the extended solvent window, reduced fouling, low background currents and anti-corrosive properties.<sup>1</sup> Therefore, of all materials, BDD potentially shows the greatest promise as an electrode which could make measurements directly in contact with solution, over long periods of time, negating the need for membrane based technology. This plenary will discuss (1) the ongoing work in our laboratory, on the development of BDD material for the electrochemical detection of analytes associated with water quality assessment in a wide range of areas<sup>2-6</sup> and (2) highlight the performance properties required for development of commercially viable sensing technology.

### References

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