

CARBON-BASED ELECTRODES FOR THE ELECTROANALYTICAL MONITORING OF O-TOLUIDINE

L. Falciola, V. Pifferi, C. Di Bari, G. Cappelletti, F. Spadavecchia, E. Ferrari, P. Ferruti, A. Manfredi, E. Ranucci
Dipartimento di Chimica, Università degli Studi di Milano, Via Golgi 19,
20133 – Milano; e-mail: luigi.falciola@unimi.it

Commercially available (Screen Printed by Drop Sens) and home-made modified electrodes based on carbon have been prepared and studied, in comparison with GC electrode, for the electroanalytical detection of o-toluidine, an organic carcinogenic synthetic pollutant mainly used as intermediate in production of azo-dyes, already studied by the research Group in a previous work [1].

The developed electroanalytical methodology is based on voltammetric techniques, which allow to achieve excellent results in terms of large dynamic concentration ranges, high accuracy and precision and low limits of detection and quantification [2]. The use of nanomaterials (in particular carbon nanotubes) enhances the potentialities of the method, improving sensitivity and lowering detection limits [3].

The optimized sensor offers the possibility to use the method also in real environmental samples, with good performances.

In particular, the technique was employed to monitor o-toluidine:

- 1) during its disappearance by photocatalytic degradation mediated by commercial and home-made ZnO nanopowders;
- 2) during the disappearance by sorption in cyclodextrine-polyamidoamine resins.

References

- [1] L. Falciola, V. Pifferi, E. Mascheroni, *Electroanal* (2012) 24, 767.
[2] C.M.A. Brett, A.M. Oliveira-Brett, *J Solid State Electr* (2011) 15, 1487.
[3] J.J. Gooding, *Electrochim Acta* (2005) 50, 3049.