Electronic Supplementary Material (ESI) for Environmental Science: Water Research & Technology.

Electronic Supporting Information (ESI)

Figure S1

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} morpholine in pH 10 carbonate buffer solution recorded using SPGE. Scan rate: 50 mVs^{-1} *vs* Ag/AgCl

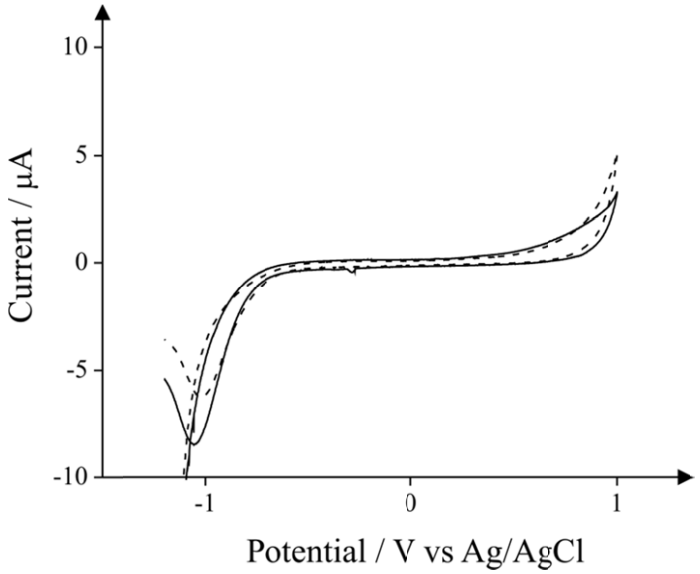


Figure S2

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} morpholine in pH 10 carbonate buffer solution recorded using BDDE. Scan rate: 50 mVs^{-1} *vs* SCE

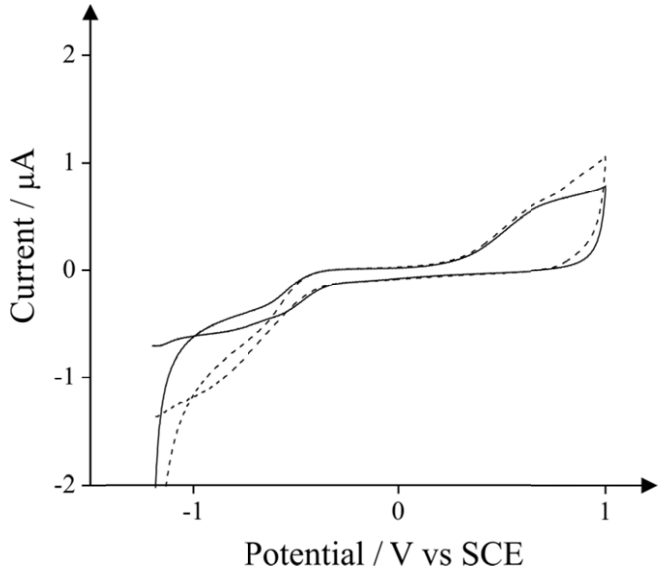


Figure S3

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} morpholine in pH 10 carbonate buffer solution recorded using GCE. Scan rate: 50 mVs^{-1} *vs* SCE

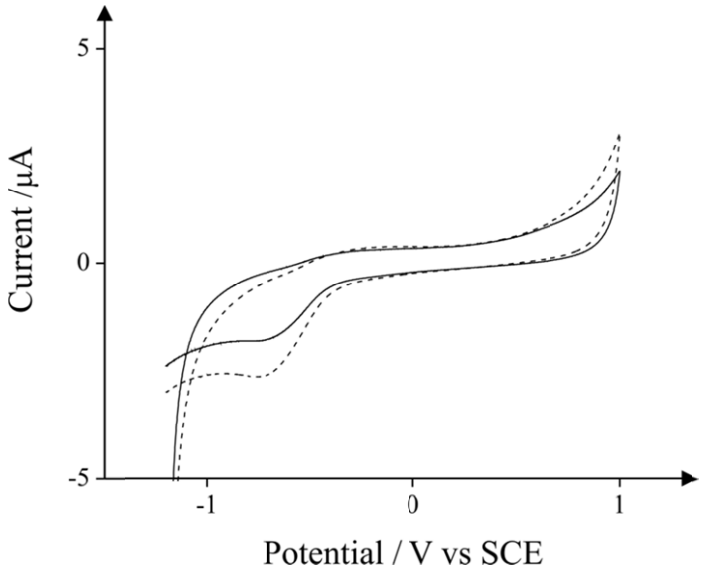


Figure S4

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} morpholine in pH 10 carbonate buffer solution recorded using AuE. Scan rate: 50 mVs^{-1} *vs* SCE

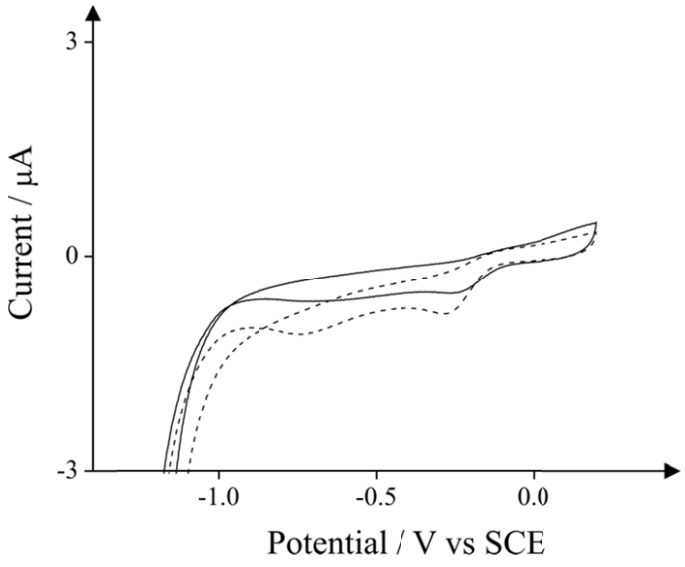


Figure S5

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} cyclohexylamine in pH 10 carbonate buffer solution recorded using SPGE. Scan rate: 50 mVs^{-1} *vs* Ag/AgCl

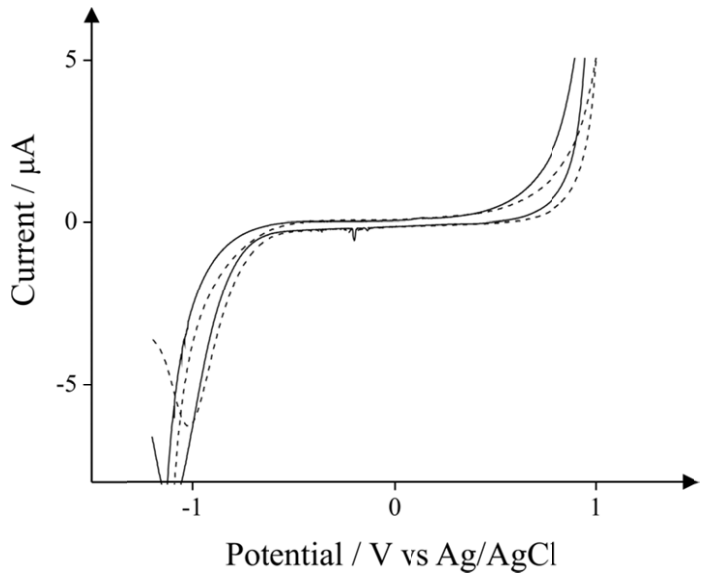


Figure S6

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} cyclohexylamine in pH 10 carbonate buffer solution recorded using BDDE. Scan rate: 50 mVs^{-1} *vs* SCE

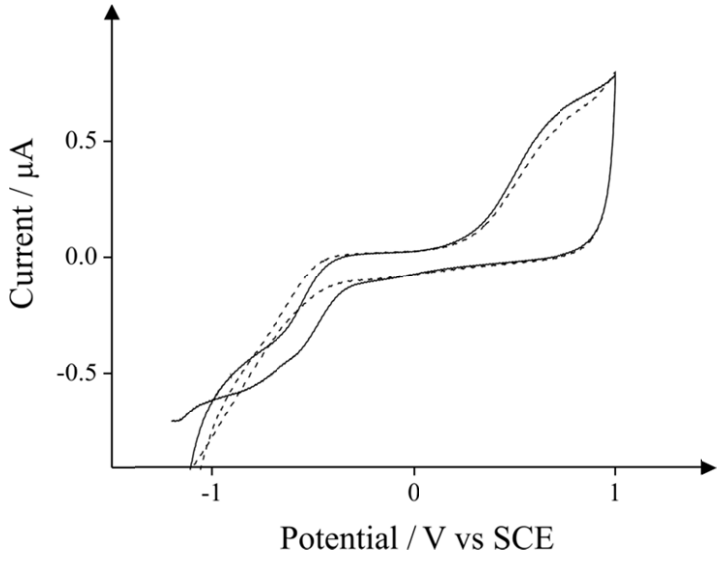


Figure S7

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} cyclohexylamine in pH 10 carbonate buffer solution recorded using GCE. Scan rate: 50 mVs^{-1} *vs* SCE

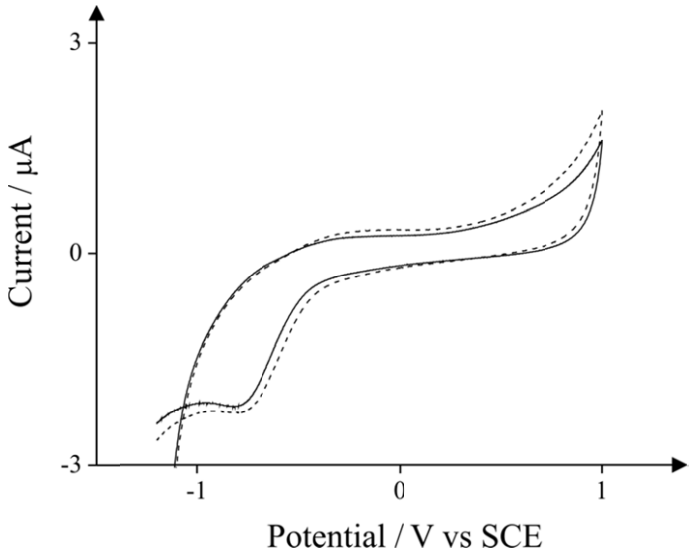
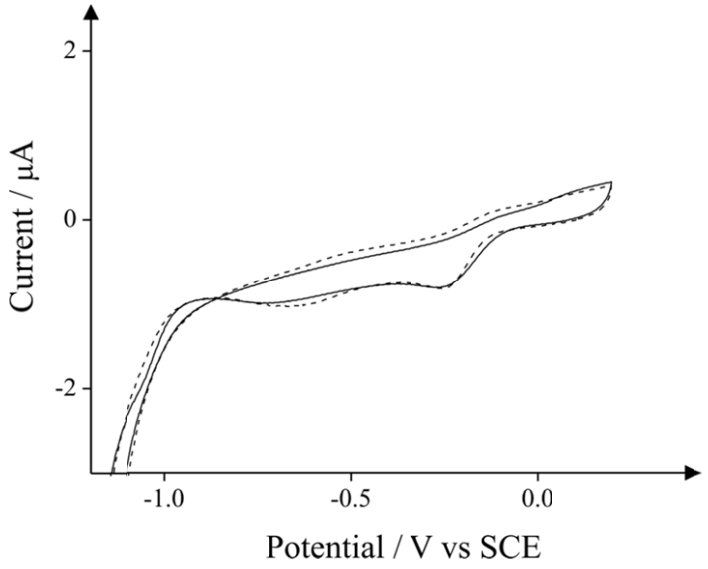


Figure S8

Typical cyclic voltammetric responses in the absence (solid line) and presence (dashed line) of 10 mgL^{-1} cyclohexylamine in pH 10 carbonate buffer solution recorded using AuE. Scan rate: 50 mVs^{-1} *vs* SCE



pH study of the mediators

The plots of reduction peak potential *Ep vs*. pH for the mediators N-(4-Amino-2-Methyl-Phenyl)-Benzenesulfonamide and N,N'-(1,4-phenylene)dibenzenesulfonamide are shown in figure S9 and S10 respectively. In case of N-(4-Amino-2-Methyl-Phenyl)-Benzenesulfonamide (S9) the plot shows a linear range with a gradient of 0.055 (*E/V= -0.055 +0.444 E/pH* R^2*=0.98)*. In case of N,N'-(1,4-phenylene)dibenzenesulfonamide (S10) the plot shows a linear range with a gradient of 0.060 (*E/V= -0.060 +0.651 E/pH* R^2*=0.99)*. Such a value is close to that expected for 2 protons and 2 electrons process according to the electrochemical step (1) of the proposed mechanism (see Scheme 1) (59 mV per pH unit at 25 °C) as deduced from the following equation:

$$E = E^0 - 0.059\frac{m}{n}pH \qquad (11)$$

where E^0 is the standard reduction potential, m and n are the number of protons and electrons participate in the reaction respectively and the other symbols have their usual meaning.

Figure S9

Cyclic voltammetric responses obtained in carbonated buffer solution at different pH values. Plot of peak potential, E_P, as a function of pH for the electrochemical reduction of 100 μg mL^{-1} N-(4-Amino-2-Methyl-Phenyl)-Benzenesulfonamide in carbonated buffer solution at different pH values. In all cases SPEs were utilised. Scan rate: 50 mV s^{-1} *vs.* Ag/AgCl

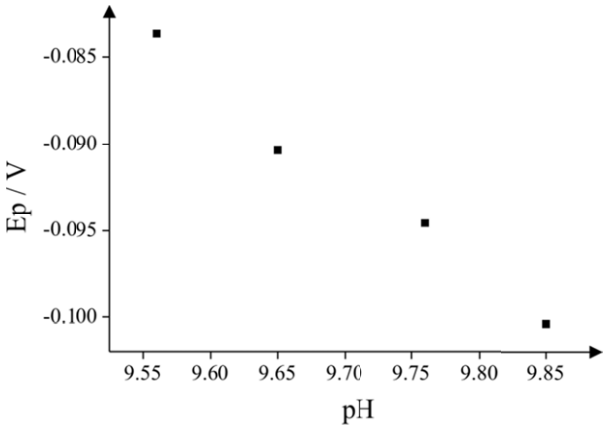


Figure S10

Cyclic voltammetric responses obtained in carbonated buffer solution at different pH values. Plot of peak potential, E_P, as a function of pH for the electrochemical reduction of 100 μg mL^{-1} N,N'-(1,4-phenylene)dibenzenesulfonamide in carbonated buffer solution at different pH values. In all cases SPGEs were utilised. Scan rate: 50 mV s^{-1} *vs.* Ag/AgCl