

## Antioxidant sensors based on DNA modified electrodes

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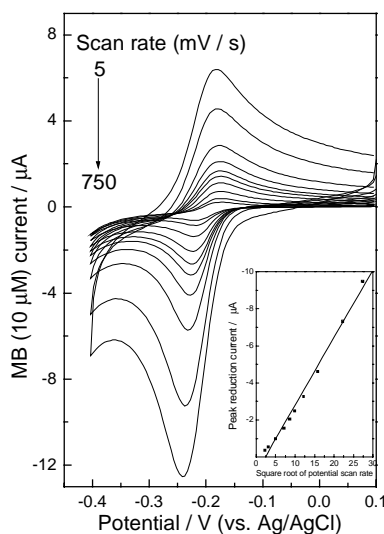
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### Abstract

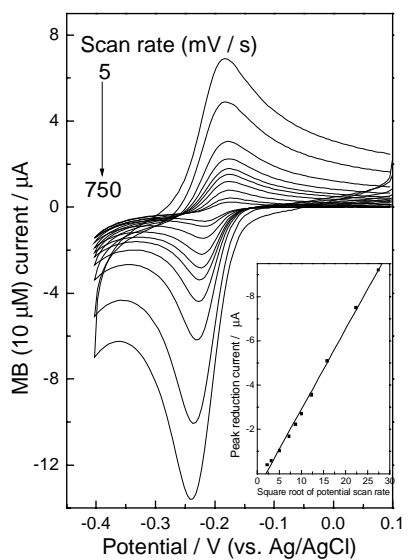
TiO<sub>2</sub>/ITO modified electrodes were developed to quantitatively photo-oxidise adsorbed ds-DNA and to study the effect of antioxidants as ds-DNA protecting agents. TiO<sub>2</sub> films are used for efficient ds-DNA immobilization, for ds-DNA oxidation through photogenerated hydroxyl radicals and as electrode for amperometric sensing. The films, prepared by a sol-gel process, are deposited on ITO glass electrodes. Damages occurring after ds-DNA oxidation by ROS, are detected by adding MB as an intercalant probe and by monitoring the electrochemical reduction current of the intercalated redox probe. The MB electrochemical signal is found to be sensitive enough to monitor ds-DNA structure changes and the electrochemical sensor has been applied to the evaluation of the antioxidant properties of glutathione and gallic acid.

a)



**Figure S-1a:** CV of MB (10 μM in PBS buffer pH 7.4) performed on an (TiO<sub>2</sub>)<sub>3</sub>/ITO electrode at different scan rates. Inset, linear relation between the peak current values and the square root of the scan rate.

b)



**Figure S-1b:** CV of MB (10 μM in PBS buffer pH 7.4) performed on an (TiO<sub>2</sub>)<sub>3</sub>/ITO electrode at different scan rates. The (TiO<sub>2</sub>)<sub>3</sub>/ITO electrode was illuminated with UV (360 nm) for 30 min prior to the electrochemical measurements. Inset, linear relation between the peak current values and the square root of the scan rate.