

Gruppo SENSORI - Lecce

Prof. Cosimino MALITESTA

Dr. M. Rachele GUASCITO

R.A.PICCA (PhD Student)

E.MAZZOTTA (PhD Student)

C.SCIANCALEPORE (PhD Student)

2001 ⇔ ⇔ ⇔ 2007



*Electrosynthesized
Polymers*

*Molecular
Imprinting
Electrochemical
Polymerisation*

RECOGNITION ELEMENT

TiO₂ Nanoparticles

TRANSDUCER



- ELECTROCHEMICAL
- PIEZOELECTRIC

PREVIOUS WORK

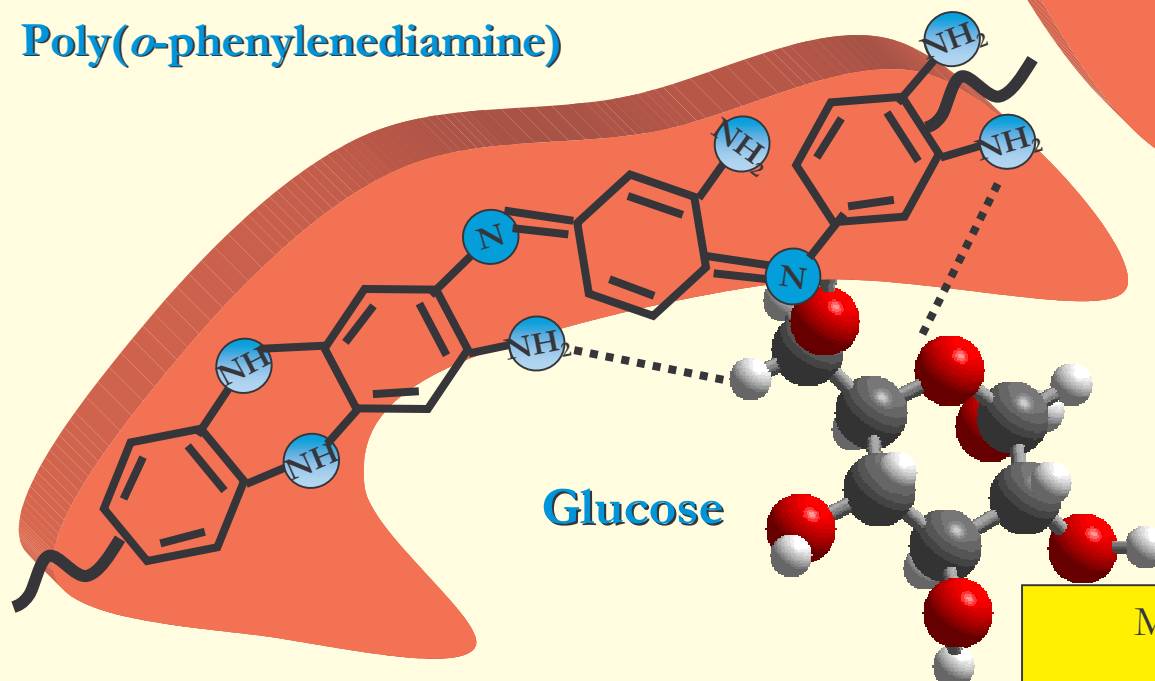
Electrochemical enzyme immobilisation

Malitesta C., Palmisano F., Torsi L., Zambonin P.G.

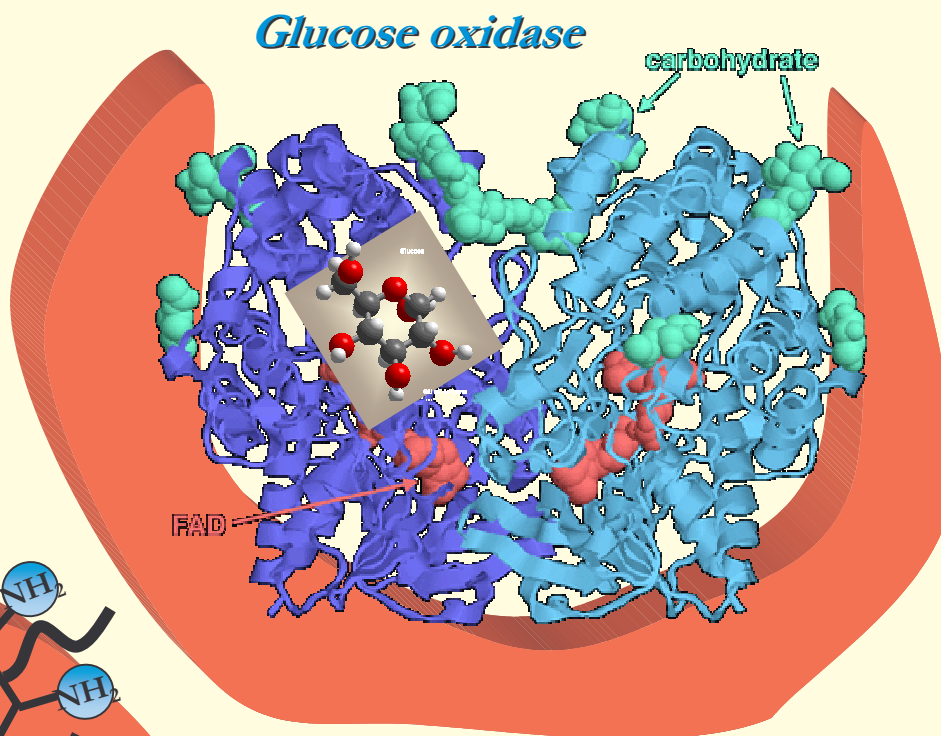
Anal. Chem. (1990), 62, 2735.

No. Of Citations: 275 (2006: 11)

Poly(*o*-phenylenediamine)



Glucose



Glucose oxidase

carbohydrate

FAD

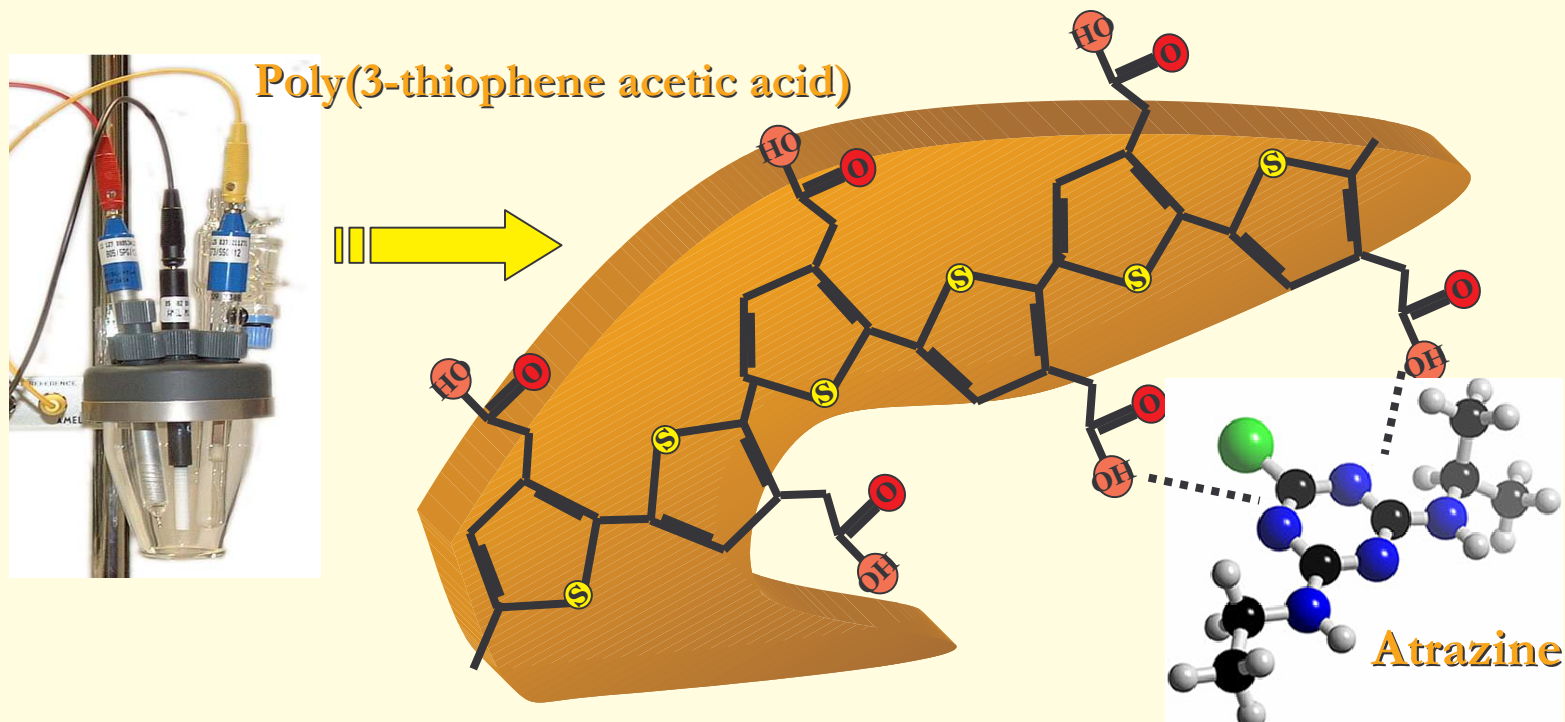
MIEP

No. Of Citations: 115 (2006: 12)

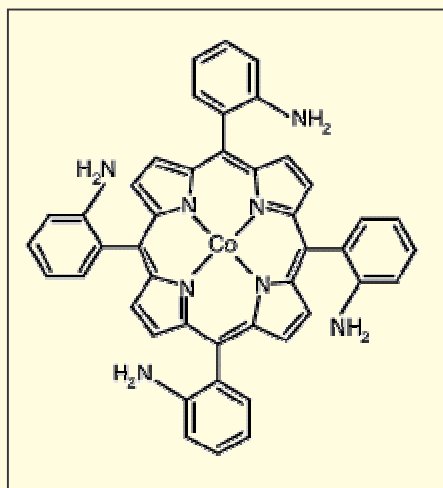
Malitesta C., Losito I., Zambonin P.G.

Anal. Chem. (1999), 71, 1366.

MOLECULARLY IMPRINTED Electrosynthesized POLYMERS



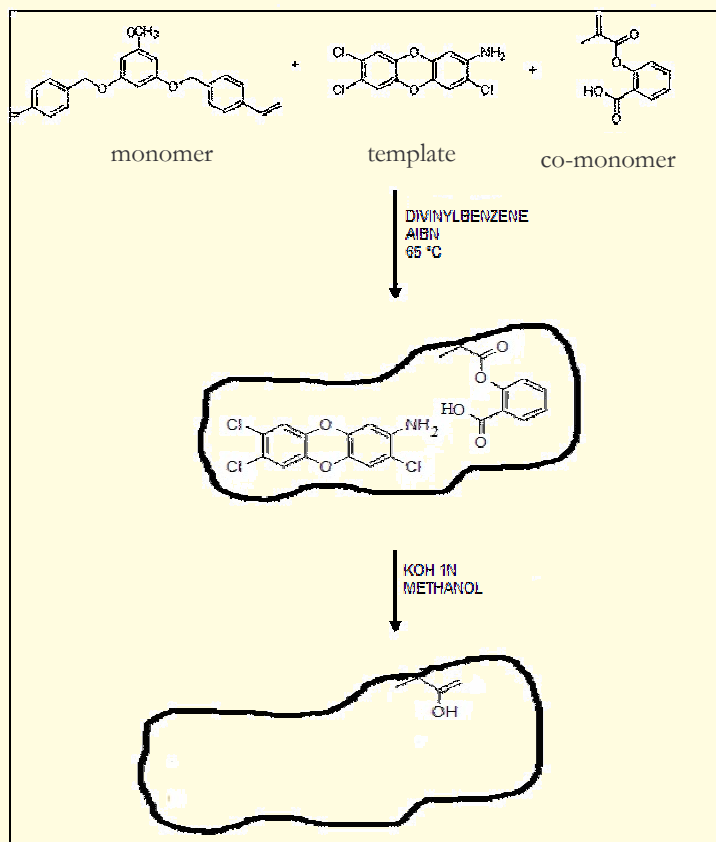
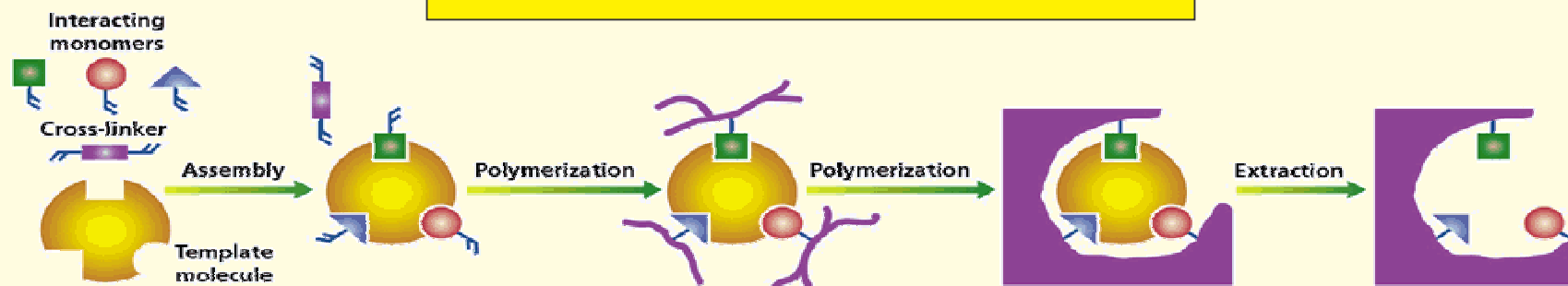
C. Malitesta, F. Palmisano, P.G. Zambonin; MIP2000, International Workshop on Molecular Imprinting, Cardiff(UK), July 3-5 2000, p.59



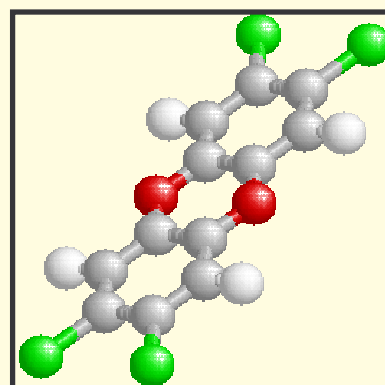
Electrocatalytic MIEP

E.Mazzotta, C.Malitesta
E-MRS 2007 Spring Meeting, Strasbourg
(France), Abs. No. K6GO9

MIP for Dioxin



- Non covalent imprinting
- Use of “dummy” template



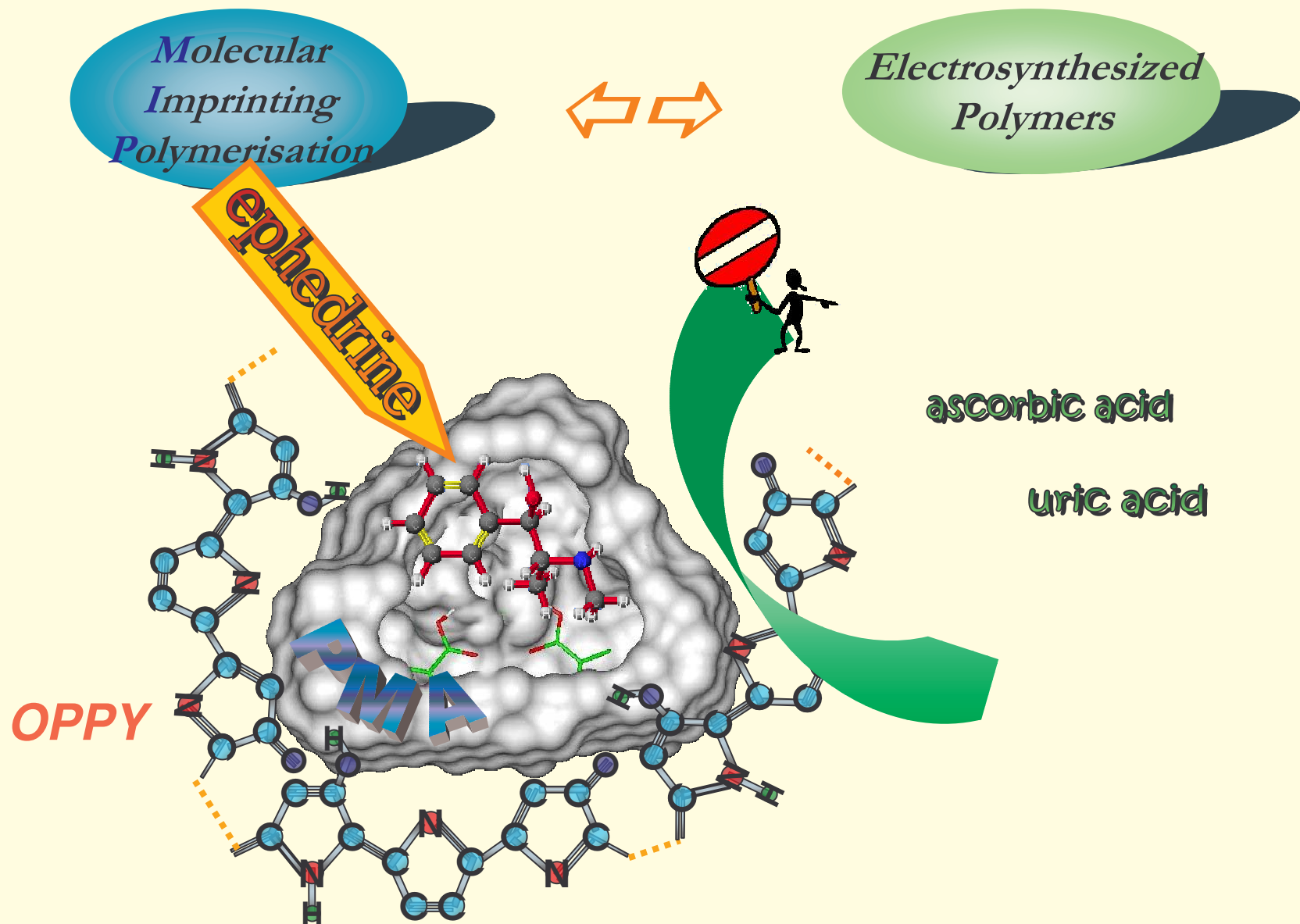
Target molecule

2,3,7,8 tetrachlorodibenzo-*p*-dioxin

TCDD

Malitesta C., Picca R.A., Ciccarella G., Sgobba V., Brattoli M.

Sensors (2006), 6, 915



R.A. Picca, E. Mazzotta, C. Malitesta, S.A. Piletsky, E.V. Piletska
 Biosensors 2006, Toronto(Ca), May 10-12 2006, P216

Prof. S.Piltesky, Institute of BioScience and Technology, Cranfield University, England

TiO₂ Nanoparticles

C. Malitesta, A. Tepore, L. Valli, Genga A., T. Siciliano

Thin Solid Films 422 (2002)112-119

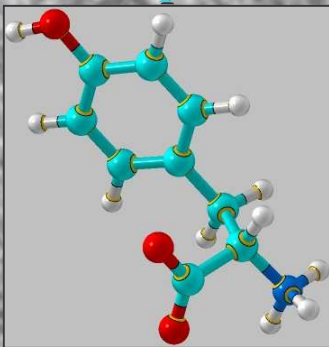
$d_m = 2 - 8 \text{ nm}$



A

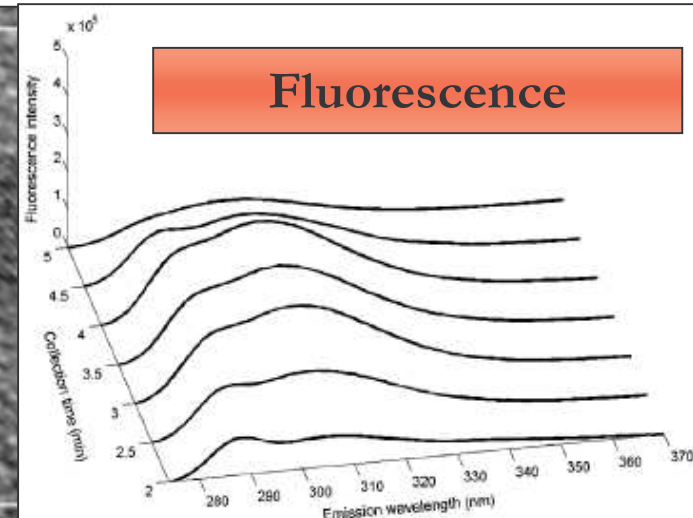
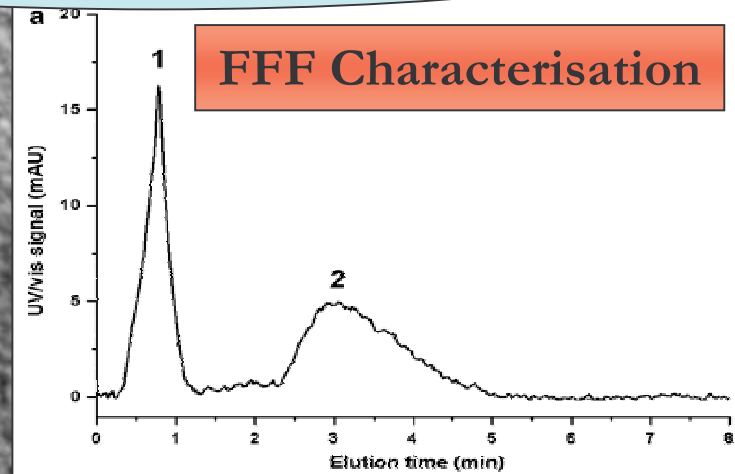
Zattoni A., Reschiglian P., Montalti M., Zaccheroni N., Prodi L.,
Picca R.A., Malitesta C.
Inorganica Chimica Acta (2007), 360, 1063

...in the presence of tyrosine



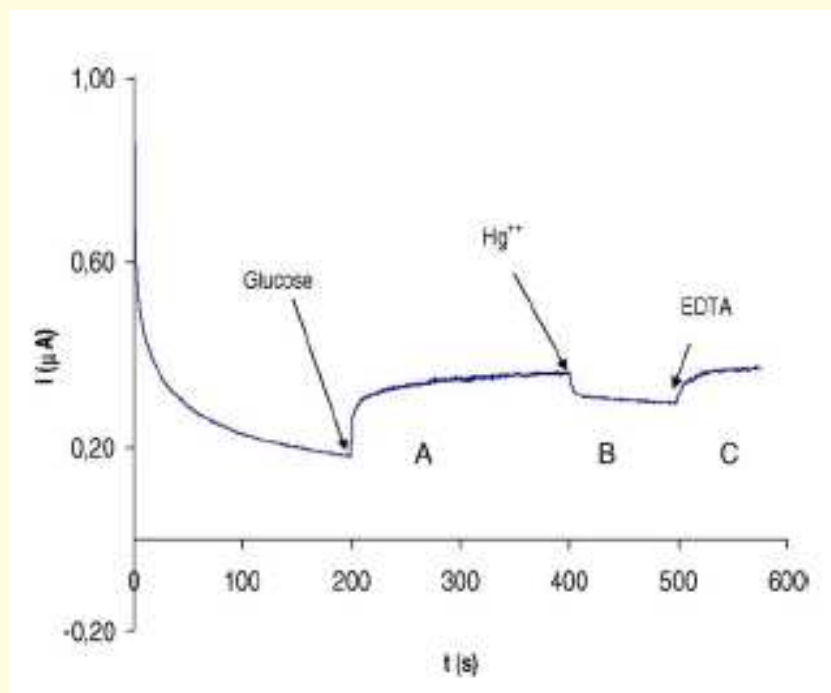
Imprinted TiO₂ NPs

B



Heavy metal determination by inhibition in Pt/PPD/GOx

Malitesta, C.; Guascito, M. R.
Biosensors & Bioelectronics (2005), 20(8), 1643-
1647



M.R. Guascito, A. Coppola, C. Malitesta, R.A.
Picca
Biosensors 2006, Toronto, May 10-12, 2006,
P233

