

Supporting Information for

Disposable electrochemical sensor to evaluate the phytoremediation of the aquatic plant *Lemna minor* L. towards Pb^{2+} and/or Cd^{2+}

Daniela Neagu^{†,‡}, Fabiana Arduini^{†,‡,}, Josefina Calvo Quintana^{†,‡}, Patrizia Di Cori[§], Cinzia Forni[§], Danila Moscone^{†,‡}*

[†] Dipartimento di Scienze e Tecnologie Chimiche, Università di Roma Tor Vergata, Via della Ricerca Scientifica, 00133 Rome, Italy

[‡] Consorzio Interuniversitario Biostrutture e Biosistemi “INBB”, Viale Medaglie d’Oro 305, 00136 Rome, Italy

[§] Dipartimento di Biologia, Università di Roma Tor Vergata, Via della Ricerca Scientifica, 00133 Rome, Italy

Corresponding author:

E-mail: fabiana.arduini@uniroma2.it (Fabiana Arduini)
Via della Ricerca Scientifica 1, 00133 Rome, Italy
Tel.: +39-06-72594404; Fax: +39-06-72594328

7 pages

5 figures

1 table

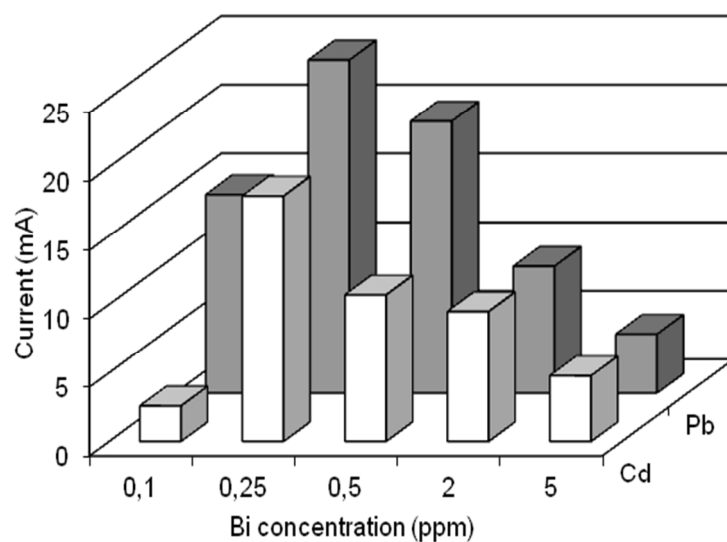


Figure SI-1 Bismuth concentration effect on peak height in a solution containing 60 ppb Pb^{2+} , 60 ppb Cd^{2+} and Bi^{3+} concentration between 0.1 and 5 ppm. SWV parameters: $E_{\text{begin}}=-1$ V; $E_{\text{end}}=-0.4$ V; $E_{\text{cond}}=-0.4$ V; $t_{\text{cond}}=30$ s; $E_{\text{dep}}=-1$ V; $t_{\text{dep}}=300$ s; Frequency=50 Hz; $E_{\text{step}}=0.016$ V; $E_{\text{pulse}}=0.02$ V; $t_{\text{eq}}=15$ s

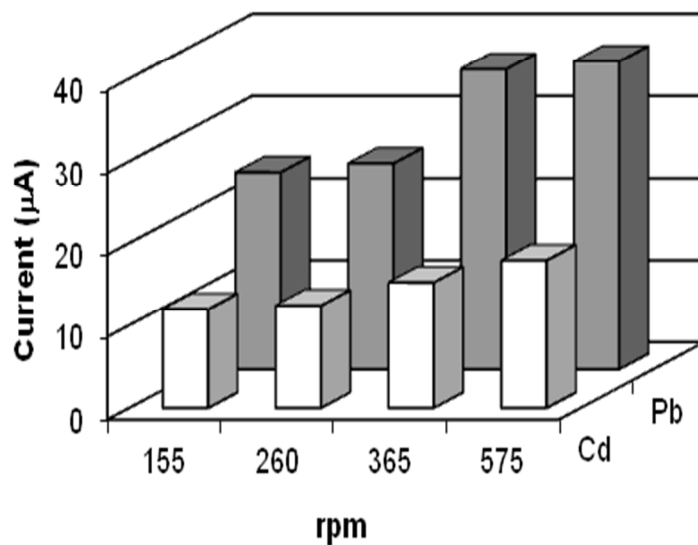


Figure SI-2 Stirring solution rate effect on peak height in a solution containing 60 ppb Pb^{2+} , 60 ppb Cd^{2+} and 0.25 ppm Bi^{3+} . SWV parameters: $E_{\text{begin}}=-1$ V; $E_{\text{end}}=-0.4$ V; $E_{\text{cond}}=-0.4$ V; $t_{\text{cond}}=30$ s; $E_{\text{dep}}=-1$ V; $t_{\text{dep}}=300$ s; Frequency=50 Hz; $E_{\text{step}}=0.016$ V; $E_{\text{pulse}}=0.02$ V; $t_{\text{eq}}=15$ s.

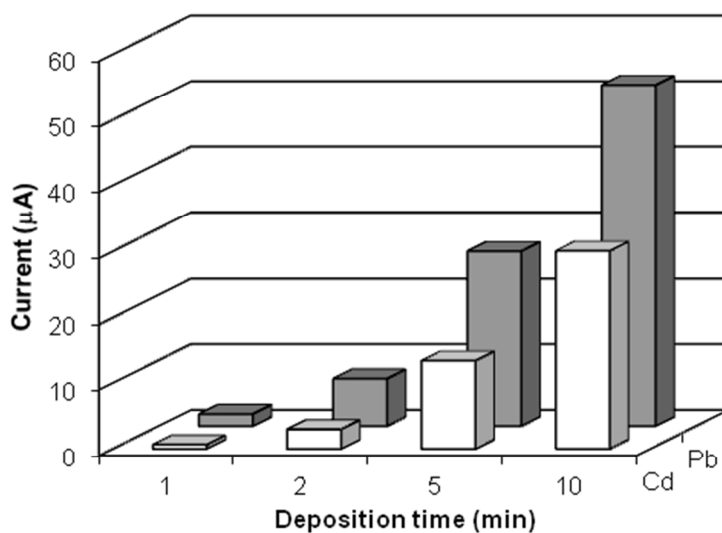


Figure SI-3 Deposition time effect on peak height in a solution containing 60 ppb Pb^{2+} , 60 ppb Cd^{2+} and 0.25 ppm Bi^{3+} . SWV parameters: $E_{\text{begin}}=-1$ V; $E_{\text{end}}=-0.4$ V; $E_{\text{cond}}=-0.4$ V; $t_{\text{cond}}=30$ s; $E_{\text{dep}}=-1$ V; $t_{\text{dep}}=60-600$ s; Frequency=50 Hz; $E_{\text{step}}=0.016$ V; $E_{\text{pulse}}=0.02$ V; $t_{\text{eq}}=15$ s.

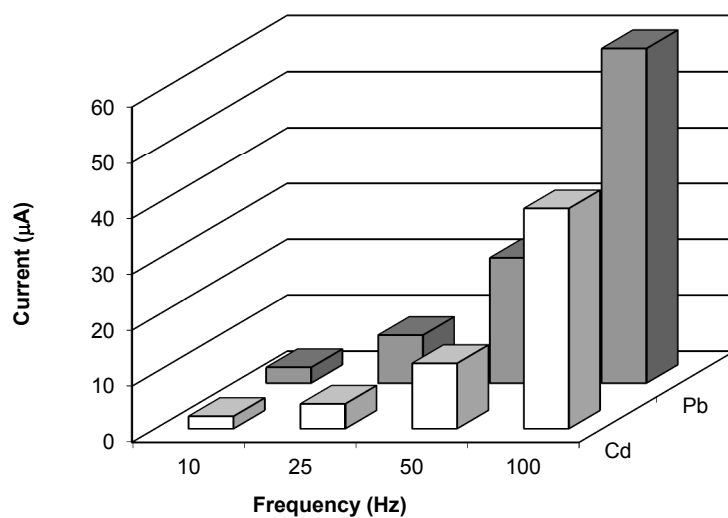


Figure SI-4 Frequency effect on peak height in a solution containing 60 ppb Pb^{2+} , 60 ppb Cd^{2+} and 0.25 ppm Bi^{3+} . SWV parameters: $E_{\text{begin}}=-1$ V; $E_{\text{end}}=-0.4$ V; $E_{\text{cond}}=-0.4$ V; $t_{\text{cond}}=30$ s; $E_{\text{dep}}=-1$ V; $t_{\text{dep}}=300$ s; Frequency=10-100 Hz; $E_{\text{step}}=0.016$ V; $E_{\text{pulse}}=0.02$ V; $t_{\text{eq}}=15$ s.

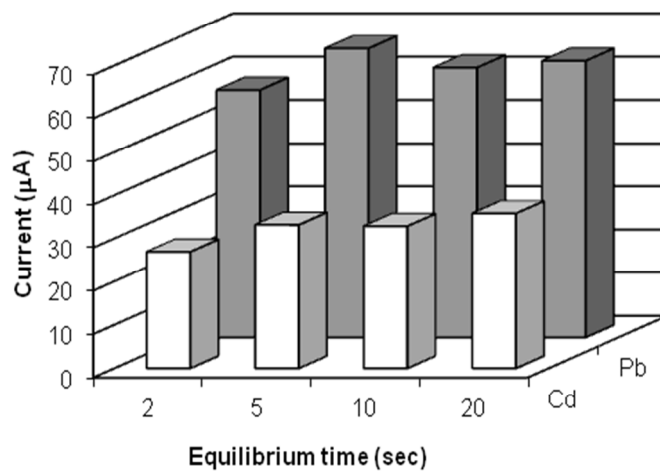


Figure SI-5 Equilibrium time effect (t_{eq}) on peak height in a solution containing 60 ppb of Pb^{2+} , 60 ppb Cd^{2+} and 0.25 ppm Bi^{3+} . SWV parameters: $E_{begin}=-1$ V; $E_{end}=-0.4$ V; $E_{cond}=-0.4$ V; $t_{cond}=10-60$ s; $E_{dep}=-1$ V; $t_{dep}=300$ s; Frequency=100 Hz; $E_{step}=0.01$ V; $E_{pulse}=0.02$ V; $t_{eq}=2-20$ s.

Table SI-6 Comparative studies between the electrochemical sensor and ICP-MS regarding some IRRI samples spiked with heavy metals

<i>Heavy metal added (ppm)</i>	<i>Heavy metal founded (ppm $\pm \sigma$)</i>	
	<i>ICP-MS</i>	<i>Sensor</i>
2.5 ppm Cd ²⁺	2.81 $\pm$ 0.09	2.40 $\pm$ 0.16
5 ppm Cd ²⁺	5.09 $\pm$ 0.16	5.0 $\pm$ 0.5
10 ppm Pb ²⁺	11.17 $\pm$ 0.19	9.5 $\pm$ 0.9

