**Tables Captions**

Table 1 The operating conditions optimized for Cr(VI) determination with DP-ASV using a Aufilm-GCE sensor

|  |  |
| --- | --- |
| Experimental conditions:  (DP-ASV) | Optimized Value |
| Supporting electrolyte | HCl 0.1 M |
| pH | 1.0 |
| Deposition time | 120 s |
| Deposition potential | -0.2 V |
| Detection potentiala | +0.3 V |
| Scan rate | 100 mV/s |
| Potential scan | -0.2 to 0.8 V |
| Modulation amplitude | 20 mV |
| Modulation time | 5 ms |

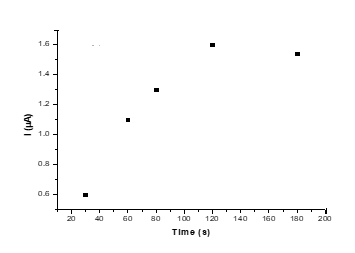
Table 2 Analytical performance of different modified electrodes for Cr(VI) determination.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Modified electrode** | | |  | | **Method** | **LOD (µg/L-1)** | | | | **LDR (µg/L-1)** | | | **Reference** | | | | |
| Electrochemically activated GCE | | | | DPV | | 6.25 | | | | 20.8–13000 | | | *Richtera et al 2016* | | | | |
| Gold screen printed macro electrode | | | | LSV | | 228 | | | | 520-84240 | | | *Metters et al 2012* | | | | |
| AuNP-ITO electrode d | | |  | CV c | | 104 | 260–5200 | | | | | *Tsai and Chen 2008* | | | | | |
|  | Amperometry | | 5.2 | 26–2600 | | | | |  | |
|  |  |  |  | *Tsai and Chen 2008* | | | | |
| Ag NPs a - carbon SPE e | | |  | DPV | | 44.2 | | 26–1976 | | | | | *Domínguez-Renedo et al 2008* | | | | | |
| Au NPs - carbon SPE | | |  | DPV | | 20.8 | | 20.8–1664 | | | | |  | | | | |
| Ag plated-GCE | | | | DP-ASV | | 5.2 | | 18.2-2080 | | | *Stojanović et al 2018* | | | | | | |
| Graphite screen printed electrode | | | | LSV | | 18.7 | | 99.8-998.4 | | | | | | | | *Hallam et al 2010* | |
| Au film-GCE | |  |  | DP-ASV | | 5.5 | | | 10–120 | | | | | | ***This work*** | | |
| aNPs – nanoparticles, bLSV – Linear sweep voltammetry, cCV – Cyclic voltammetry, dAuNP-ITO electrode – Gold | | | | | | | | | | | | | | | | | |
| nanoparticle- electrodeposited indium-tin oxide electrode, e SPE – screen printed electrode | | | | | | | | | | | | |  | | | | |

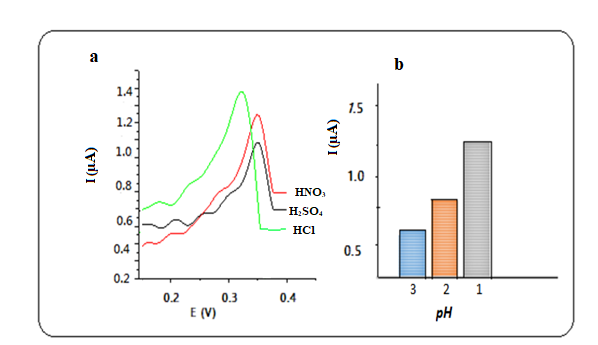
Table. 3Recovery test with sewage water samples

|  |  |  |  |
| --- | --- | --- | --- |
| Sample  (sewage water)  (µgL-1) | **Cr(VI)**  Added  (µgL-1) | **Cr (VI)**  Found  (µgL-1) | Spike  Recovery  (%) |
| Chromium Concentration | 88 | 86.1± 0.8 | 97.8 |
| 150 ± 0.6 | 176 | 176.5 ±0.5 | 100.3 |

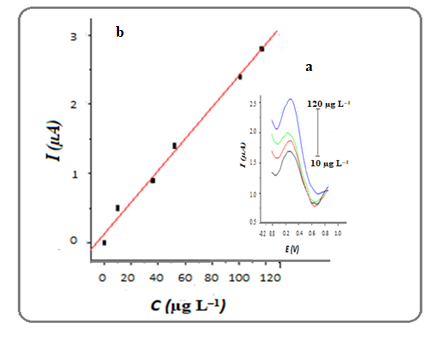
**Figure Captions**



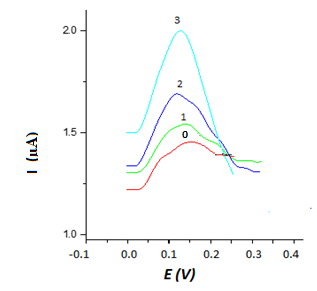
**Fig. 1** Effect of the accumulation time (30s; 60s;120s; 180s) at Aufilm/GCE**,** in 0.1 M HCl for concentration 50 µg L-1 Cr(VI)



**Fig. 2 a)** Anodic stripping voltammograms of 50 µg L–1 Cr(VI) at various electrolyte. **b)** Effect of pH on the peak current for the determination of Cr(VI) on Aufilm-GCE



**Fig. 3 a)** DP-AS voltammograms registered with Aufilm/GCE electrode in HCl 0.1 M, tdep=120 s, poteciacial from -0.2 to 0.8 V in different concetration of Cr(VI) .**b)** Calibration curve of various Cr (VI) concentration



**Fig. 4** DP-AS Voltammograms for standard additions of Cr(VI) in a sewage water sample, (0) sample signal before spiking and in concentrations (1)30, (2) 60, (3) 88 µg/L-1 Cr(VI)