

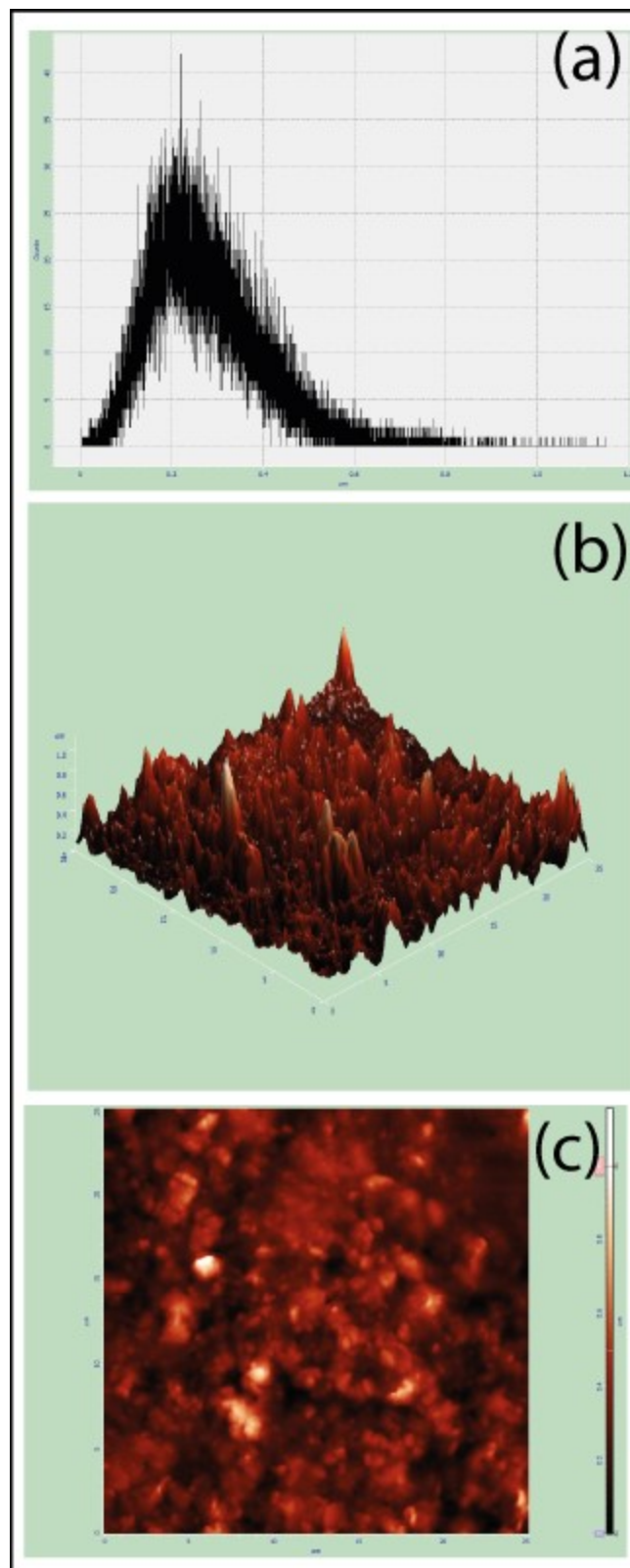
# **Inkjet-printed flexible graphene paper electrode for electrochemical determination of mercury**

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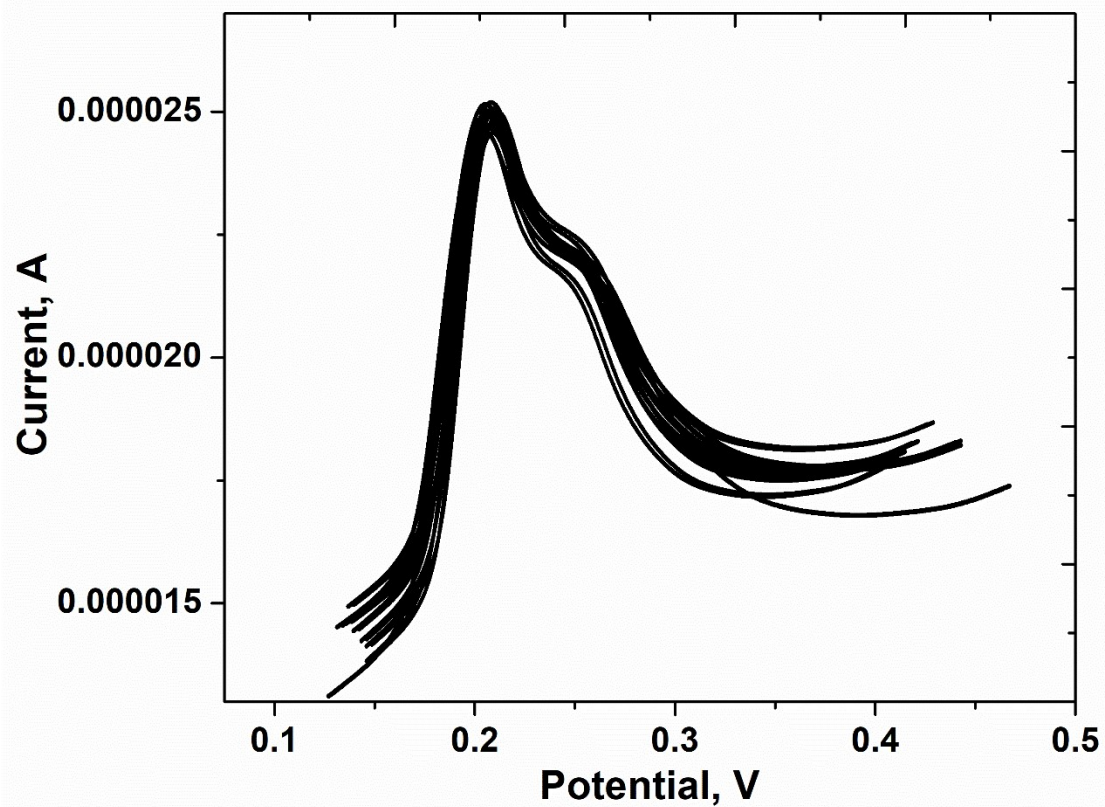
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**Fig- S1.** AFM images of Gr-EC.



**Fig- S2.** 30 cycles LSV plots of 50  $\mu\text{M}$  Hg(II) concentrations using IP-GPE in 0.1 M PBS (pH 4.5) at a 100 mV/s sweep rate.

<b>Table S1. AFM data</b>	
Amount of sampling	65536
Max	1151.6 nm
Min	0 nm
Peak-to-peak, $S_y$	1151.6 nm
Ten-point height, $S_z$	563.784 nm
Average	274.222 nm
Average Roughness, $S_a$	95.932 nm
Root Mean Square, $S_q$	122.417 nm
Second moment	90183.7
Surface skewness, $S_{sk}$	0.948
Coefficient of kurtosis, $S_{ka}$	1.8015
Entropy	12.213
Redundance	-0.201

<b>Table S2.</b> Determination of stability of Gr-EC/PPE when IP-GPE used as a working electrode for 30 days with 1 mM H <sub>g</sub> (II).		
Number of Days	Reduction Potential (V)	Reduction Current (A)
1.	0.2289	0.00003
2.	0.2287	0.000029
3.	0.2285	0.000032785
4.	0.22808	0.000032929
5.	0.228	0.000032749
6.	0.228	0.000032965
7.	0.22792	0.000033001
8.	0.22784	0.000033037
9.	0.22776	0.000033073
10.	0.22768	0.000033109
11.	0.2276	0.000033145
12.	0.22752	0.000033181
13.	0.2275	0.000032893
14.	0.22744	0.000033217
15.	0.22736	0.000033253
16.	0.22728	0.000033289
17.	0.2272	0.000033325
18.	0.22712	0.000033361
19.	0.22704	0.000033397
20.	0.22696	0.000033433
21.	0.22688	0.000033469
22.	0.2268	0.000033505

23.	0.22672	3.3541E-05
24.	0.22664	3.3577E-05
25.	0.22656	3.3613E-05
26.	0.22648	3.3649E-05
27.	0.2264	3.3685E-05
28.	0.22632	3.3721E-05
29.	0.22624	3.3757E-05
30.	0.22616	3.3793E-05

**Table S3.** Determination of RSD, % (precision) of reduction potential and reduction current when IP-GPE used as a working electrode for 30 times scanning with 50  $\mu\text{M}$  Hg (II).

S. No.	Reduction Potential (V)	Reduction Current (A)
1.	0.228	0.000032749
2.	0.2285	0.000032785
3.	0.2289	0.00003
4.	0.2287	0.000029
5.	0.2275	0.000032893
6.	0.22808	0.000032929
7.	0.228	0.000032965
8.	0.22792	0.000033001
9.	0.22784	0.000033037
10.	0.22776	0.000033073
11.	0.22768	0.000033109

12.	0.2276	0.000033145
13.	0.22752	0.000033181
14.	0.22744	0.000033217
15.	0.22736	0.000033253
16.	0.22728	0.000033289
17.	0.2272	0.000033325
18.	0.22712	0.000033361
19.	0.22704	0.000033397
20.	0.22696	0.000033433
21.	0.22688	0.000033469
22.	0.2268	0.000033505
23.	0.22672	3.3541E-05
24.	0.22664	3.3577E-05
25.	0.22656	3.3613E-05
26.	0.22648	3.3649E-05
27.	0.2264	3.3685E-05
28.	0.22632	3.3721E-05
29.	0.22624	3.3757E-05
30.	0.22616	3.3793E-05
<b>SD</b>	<b>0.000721295</b>	<b>9.99887E-07</b>
<b>Mean</b>	<b>0.2273</b>	<b>3.30484E-05</b>
<b>RSD %</b>	<b>± 0.32</b>	<b>± 3.0255</b>

**Table S4.** Calculation of recovery % of Hg(II) in industrial wastewater sample when IP-GPE used as working electrode in optimized condition.

<b>Amount of Hg(II) added (<math>\mu\text{M}</math>)</b>	<b>Amount of <math>\text{H}_2\text{O}_2</math> found (<math>\mu\text{M}</math>)</b>	<b>Recovery %</b>
8	7.6	95.0
10	9.4	94.0