

### Supplementary data:

**Table S1.** Original data for the calibration graphs for the BRZ electrodes using DOP as plasticizer at 25 °C.

-log C	E (mV) SPE	E (mV) SCE
8	79.00	46.00
7	80.00	47.00
6	87.40	50.00
5	138.10	100.00
4	188.20	150.00
3	239.30	200.10
2	290.00	250.00

**Table S2.** Original data for the calibration graphs for the BRZ electrodes using DBS as plasticizer at 25 °C.

-log C	E (mV) SPE	E (mV) SCE
8	69.00	37.40
7	70.00	38.50
6	74.00	41.60
5	125.70	91.70
4	177.70	142.00
3	229.20	192.50
2	281.00	243.00

**Table S3.** pH effect on the potential using two concentration levels of BRZ standard solutions.

pH	10 <sup>-3</sup> M		10 <sup>-4</sup> M	
	SPE	SCE	SPE	SCE
	E (mV) ± SD *	E (mV) ± SD *	E (mV) ± SD *	E (mV) ± SD *
1.0	235.00 ± 0.85	194.00 ± 0.64	184.00 ± 1.16	150.00 ± 0.52
2.0	241.00 ± 0.63	200.00 ± 0.53	186.00 ± 0.81	151.00 ± 0.45
3.0	250.30 ± 0.76	211.90 ± 0.74	190.60 ± 1.31	153.8 ± 0.34
4.0	250.30 ± 1.01	211.90 ± 0.85	190.60 ± 0.77	153.8 ± 0.41
5.0	250.20 ± 0.45	211.80 ± 0.44	190.60 ± 0.99	153.8 ± 0.79
6.0	250.30 ± 0.50	211.90 ± 0.42	190.50 ± 0.70	153.70 ± 0.53
7.0	240.00 ± 0.66	201.00 ± 0.99	186.00 ± 1.42	151.00 ± 0.81
8.0	235.00 ± 0.94	195.00 ± 1.12	184.00 ± 0.54	150.00 ± 0.46
9.0	230.00 ± 0.81	190.00 ± 0.68	183.00 ± 1.51	149.00 ± 0.63
10.0	225.00 ± 0.42	185.00 ± 1.31	182.00 ± 0.72	148.00 ± 1.12

\* Average of three measurements.

**Table S4.** Accuracy of the fabricated electrodes.

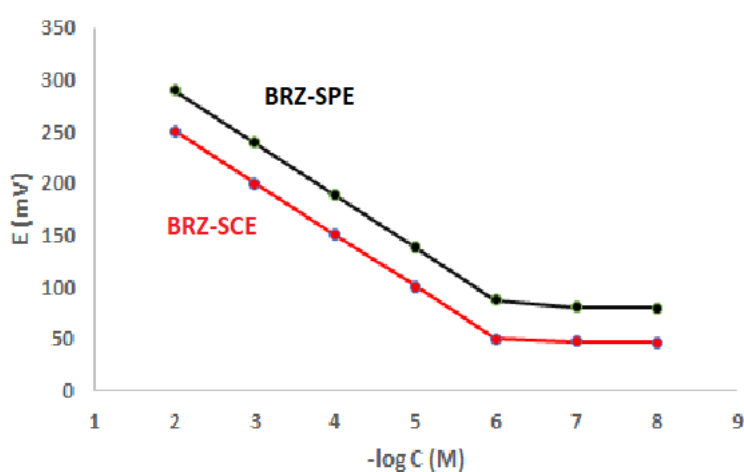
	Added concentration (M)	Found concentration (M)	Recovery%	Average recovery% $\pm$ SD
BRZ-SPE	$10.00 \times 10^{-3}$	$9.90 \times 10^{-3}$	99.00	$100.07 \pm 1.06$
	$10.00 \times 10^{-4}$	$10.01 \times 10^{-4}$	100.10	
	$10.00 \times 10^{-5}$	$10.11 \times 10^{-4}$	101.10	
BRZ-SCE	$10.00 \times 10^{-3}$	$10.04 \times 10^{-3}$	100.40	$100.42 \pm 0.93$
	$10.00 \times 10^{-4}$	$9.95 \times 10^{-4}$	99.50	
	$10.00 \times 10^{-5}$	$10.13 \times 10^{-5}$	101.30	

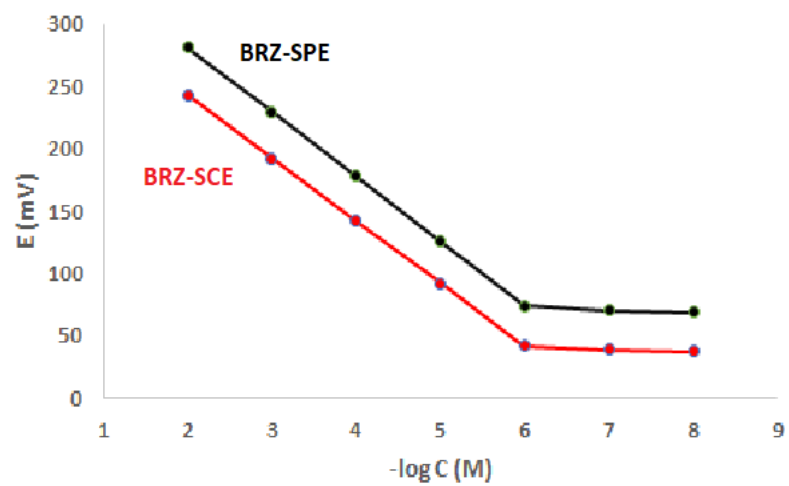
**Table S5.** Robustness of the fabricated electrodes upon carrying out slight pH change (pH 6.2).

	Added concentration (M)	Found concentration (M)	Recovery%	Average recovery% $\pm$ SD
BRZ-SPE	$10.00 \times 10^{-3}$	$10.11 \times 10^{-3}$	101.10	$101.14 \pm 1.13$
	$10.00 \times 10^{-4}$	$10.23 \times 10^{-4}$	102.30	
	$10.00 \times 10^{-5}$	$10.00 \times 10^{-4}$	100.00	
BRZ-SCE	$10.00 \times 10^{-3}$	$10.08 \times 10^{-3}$	100.80	$101.64 \pm 0.84$
	$10.00 \times 10^{-4}$	$10.23 \times 10^{-4}$	102.30	
	$10.00 \times 10^{-5}$	$10.16 \times 10^{-5}$	101.60	

**Table S6.** Ruggedness of the fabricated electrodes using Hanna digital ion analyzer.

	Added concentration (M)	Found concentration (M)	Recovery%	Average recovery% $\pm$ SD
BRZ-SPE	$10.00 \times 10^{-3}$	$10.08 \times 10^{-3}$	100.80	$99.51 \pm 1.28$
	$10.00 \times 10^{-4}$	$9.82 \times 10^{-4}$	98.20	
	$10.00 \times 10^{-5}$	$9.95 \times 10^{-4}$	99.50	
BRZ-SCE	$10.00 \times 10^{-3}$	$10.01 \times 10^{-3}$	100.10	$98.41 \pm 1.66$
	$10.00 \times 10^{-4}$	$9.84 \times 10^{-4}$	98.40	
	$10.00 \times 10^{-5}$	$9.68 \times 10^{-5}$	96.80	

**Figure S1.** Calibration graphs for the BRZ electrodes using DOP as plasticizer at 25 °C.



**Figure S2.** Calibration graphs for the BRZ electrodes using DBS as plasticizer at 25 °C.