Electronic Supplementary Material (ESI) for Analytical Methods.

Supplementary Information

Electrochemical sensor for selective determination of Sulfamethoxazole in surface water using a molecularly imprinted polymer modified BDD electrode

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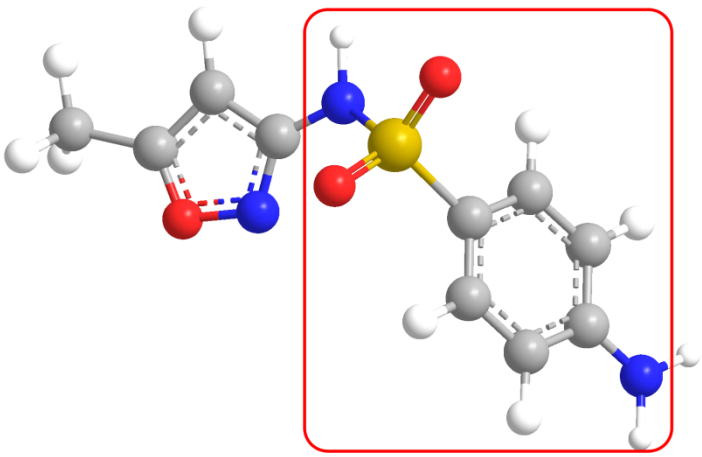

Figure S1 Chemical structure of SMX and parent structure of sulfonamides (inside of red frame), Carbon atoms (dark gray balls), hydrogen atoms (white balls), oxygen atoms (red balls), nitrogen atoms (blue balls) and sulfur atom (yellow ball).

Table S1 Index of lake water quality.

Constituent	Value	Standard*
pH	7.1	6-9
COD_{Mn} (mg / L)	4.3	6
TOC (mg / L)	13.20	--

*GHZBI, China (GB3838-2002, Category III)

Table S2 Settings of orthogonal experimental factors and level.

Factors / Levels	pH	c_{SMX} / mM	c_{Py} / mM	cycles
1	7	10	40	4
2	7.5	20	60	5
3	8	30	80	6
4	9	40	20	7

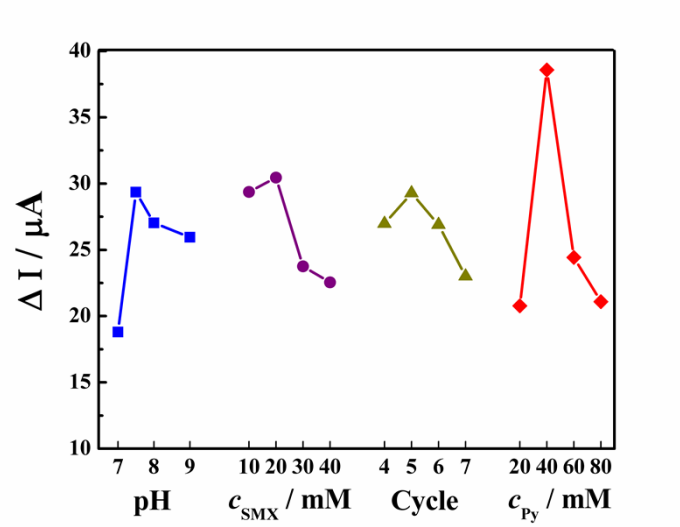

Figure S2 Effect of pH, template concentration, electro-polymerization cycles and monomer concentration on MIP/BDD with SMX concentration 100 μM, the response current is measured through SWV in pH 7.0 PBS.

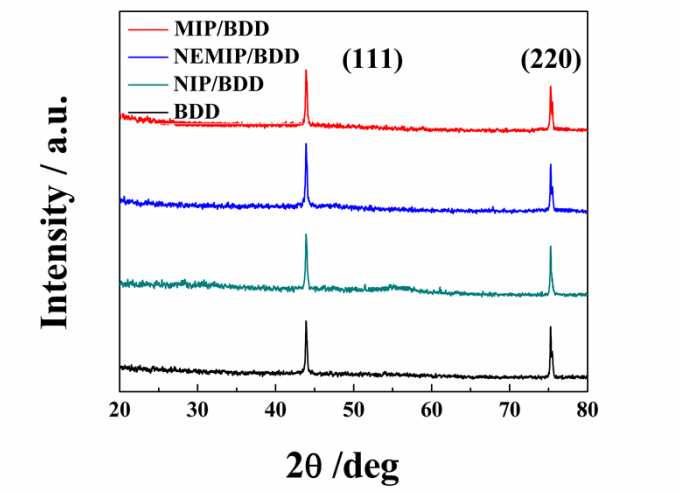

Figure S3 XRD for different electrodes.

Table S3 Range analysis of orthogonal experiment.

Factors / No.	pH	cSMX	cPy	cycles	Current (μA)
1	1	1	1	1	33.3
2	1	2	2	2	26.6
3	1	3	3	3	13.24
4	1	4	4	4	2.68
5	2	1	2	3	27
6	2	2	1	4	42.8
7	2	3	4	1	24.5
8	2	4	3	2	23.1
9	3	1	3	4	25.4
10	3	2	4	3	24.7
11	3	3	1	2	35.6
12	3	4	2	1	22.4
13	4	1	4	2	31.8
14	4	2	3	1	27.7
15	4	3	2	4	21.7
16	4	4	1	3	22.6
K_1	82.82	117.5	134.3	107.9	
K_2	117.4	121.8	97.7	117.1	
K_3	108.1	102.04	91.34	94.54	
K_4	103.8	70.78	83.68	92.58	
k_1	20.705	29.375	33.575	26.975	
k_2	29.35	30.45	24.425	29.275	
k_3	27.025	25.51	22.835	23.635	
k_4	25.95	17.695	20.92	23.145	
Range	8.645	12.755	12.655	6.13	
Optimization condition	A2	B2	C1	D2	

K_i (μA), Sum value of current of factor under level i; k_i (μA), Average value of current of factor under level i.

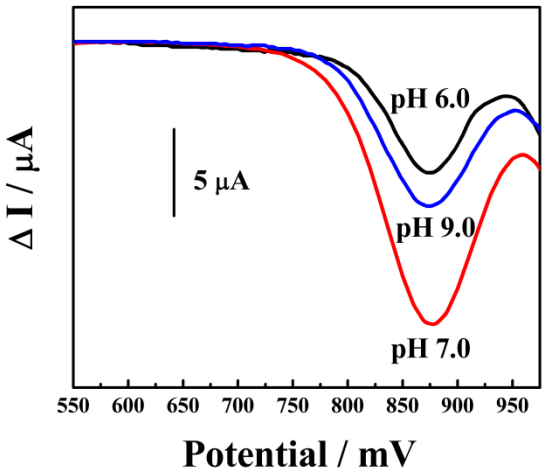

Figure S4 SWV responses of 50 μM SMX at MIP/BDD electrode in PBS solution (pH 6.0, 7.0, 9.0).