Supporting Information for

Synthesis, characterization, and evaluation of selective molecularly imprinted polymers for fast determination of synthetic cathinones

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The Slips or Langmuir–Freundlich isotherm model was calculated using equation,

$$Q_e = \frac{K_{LF} C_e^n}{1 + \alpha_{LF} C_e^n}$$

where Q_e is the amount of analyte adsorbed at equilibrium, C_e (mg/mL) represents the concentration of 4-MDMC at adsorption equilibrium. Whereas K_{LF}, α_{LF} and N are the Slips constants.

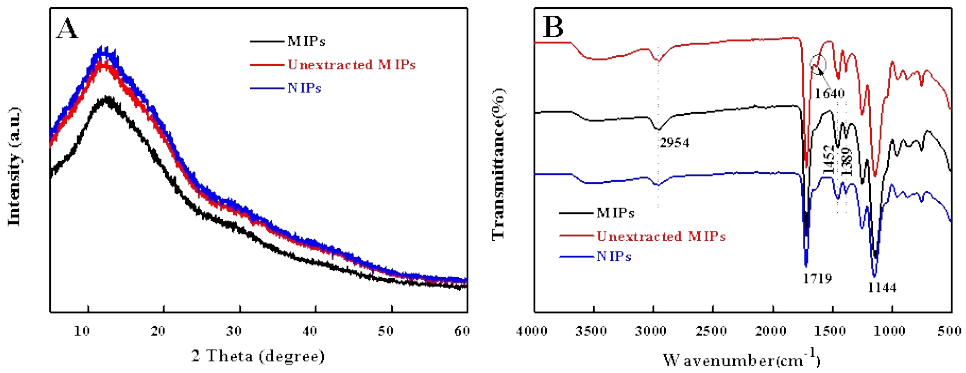

Fig.S1. (A) XRD patterns and (B) FT-IR spectra of MIPs, unextracted MIPs and NIPs.

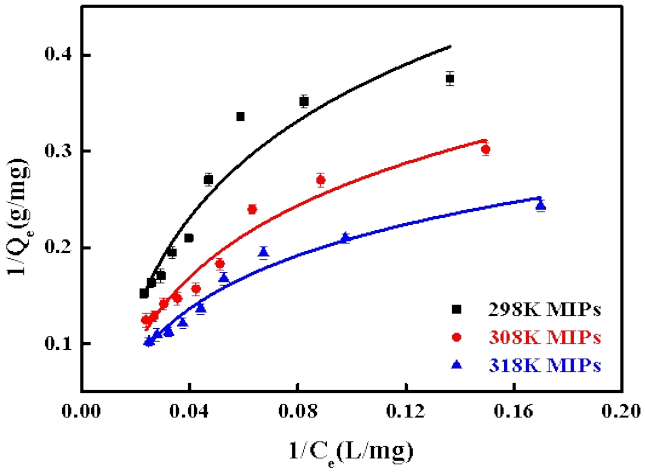

Fig.S2. Slips or Langmuir-Freundlich adsorption model of 4-MDMC onto MIPs at different temperatures.

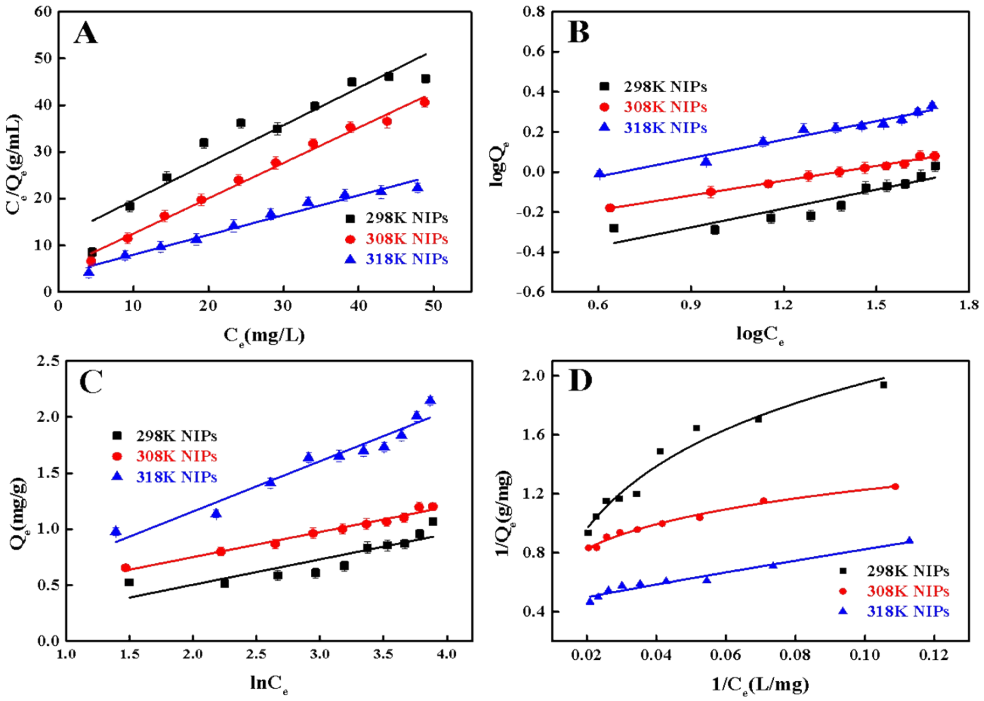

Fig.S3. (A) Langmuir adsorption model, (B) Freundlich adsorption model, (C) Temkin adsorption model, and (D) Slips or Langmuir-Freundlich adsorption model of 4-MDMC onto NIPs at different temperatures.

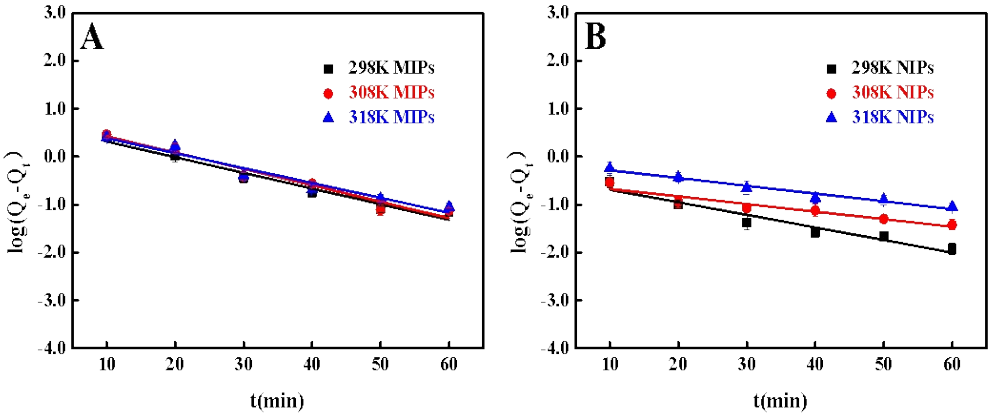

Fig.S4. Pseudo-first-order model of 4-MDMC onto (A) MIPs and (B) NIPs at different temperatures.

Table S1 Parameters of isotherm models for adsorption of 4-MDMC onto MIPs and NIPs at different temperatrures.

T/K		Q_e (mg/g)	Langmuir			Freundlich			Tempkin			Langmuir-Freundlich		
			Q_m (mg/g)	b (L/mg)	R^2	K_F	n	R^2	A	B	R^2	K_{LF}	n	R^2
298	MIPs	5.806	8.818	0.0491	0.7261	1.364	2.653	0.7572	0.9656	1.5115	0.6905	0.0260	0.0038	0..8966
	NIPs	0.861	1.246	0.0689	0.8994	0.275	3.176	0.8155	1.2497	0.2268	0.7648	0.0147	0.0093	0.9531
308	MIPs	7.004	10.593	0.0628	0.8727	1.622	2.422	0.9029	0.9569	1.9950	0.8295	0.1823	0.0208	0.9430
	NIPs	1.078	1.323	0.1520	0.9894	0.459	4.070	0.9909	3.8690	0.2240	0.9759	0.2723	0.0891	0.9817
318	MIPs	8.944	12.369	0.0715	0.8784	2.040	2.467	0.9323	1.1158	2.3201	0.8372	0.0638	0.0512	0.9579
	NIPs	1.786	2.362	0.1122	0.9720	0.620	3.251	0.9607	1.7886	0.4487	0.9345	0.2963	0.8993	0.9444

Table S2 Adsorption kinetic parameters for adsorption of 4-MDMC onto MIPs and NIPs at different temperatrures.

T/K	□	□	Pseudo-first-order			□	Pseudo-second-order		
	□	□	K_1	$\log Q_e$ (mg/g)	R^2	□	K_2	Q_e (mg/g)	R^2
298	MIPs		0.0754	0.6469	0.9584		0.0572	5.920	0.9993
	NIPs		0.0604	-0.4254	0.9212		0.4540	0.886	0.9991
308	MIPs		0.0788	0.7736	0.9476		0.0441	7.171	0.9994
	NIPs		0.0365	-0.5102	0.8972		0.5181	1.112	0.9995
318	MIPs		0.0716	0.6989	0.9447		0.0551	9.141	0.9996
	NIPs		0.0374	-0.1189	0.9584		0.1527	1.852	0.9998

Table S3 Recoveries of 4-MDMC obtained from human urine samples.

Sample	Added (μg/L)	Found (μg/L)	Recovery (%)	RSD (n=3,%)
Human urine	0	ND		
	40	27.7	69.3	4.7
	200	151.0	75.5	3.9
	400	315.6	78.9	3.5