Supporting Information

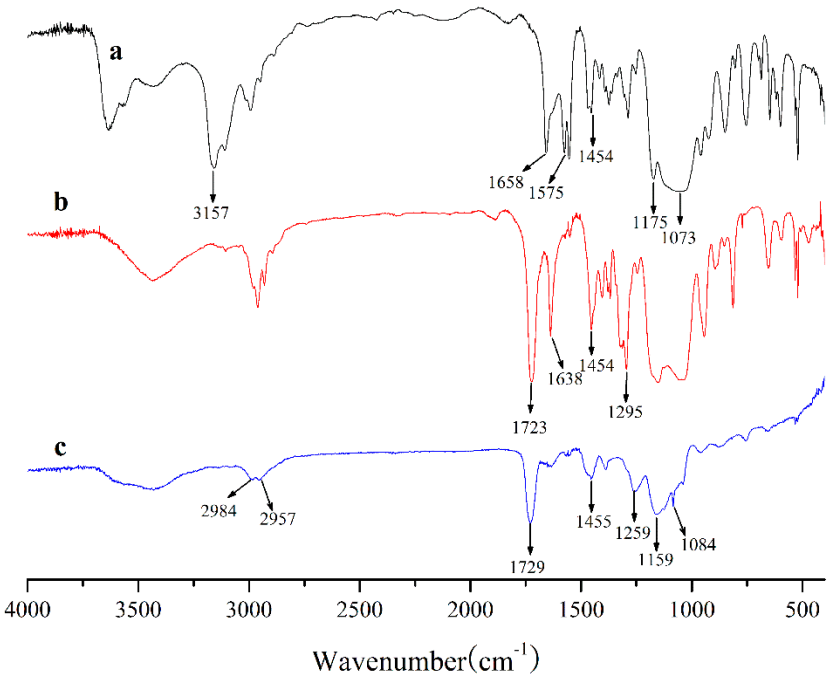

Figure S1. The infrared spectra of the monomer (a), cross-linker (b) and copolymer (c)

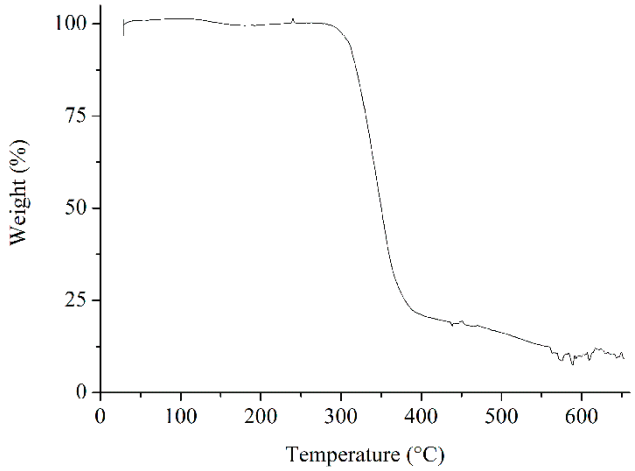

Figure S2. TGA curve of the copolymer

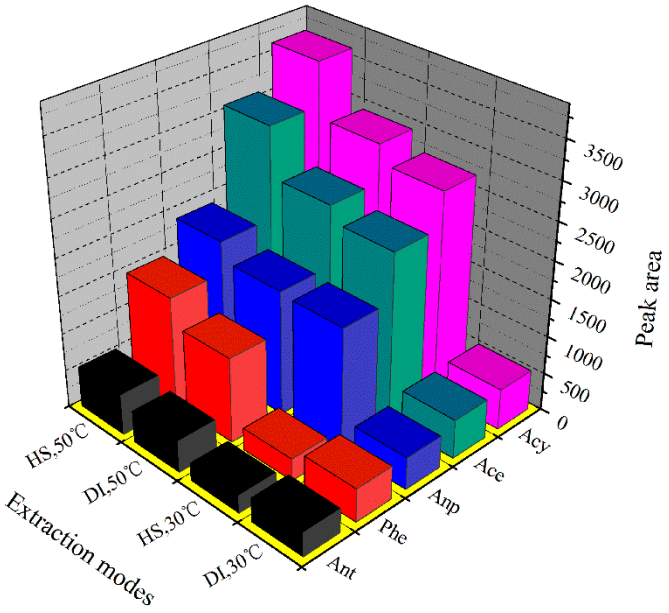

Figure S3. Comparison of HS-SPME and DI-SPME extraction mode

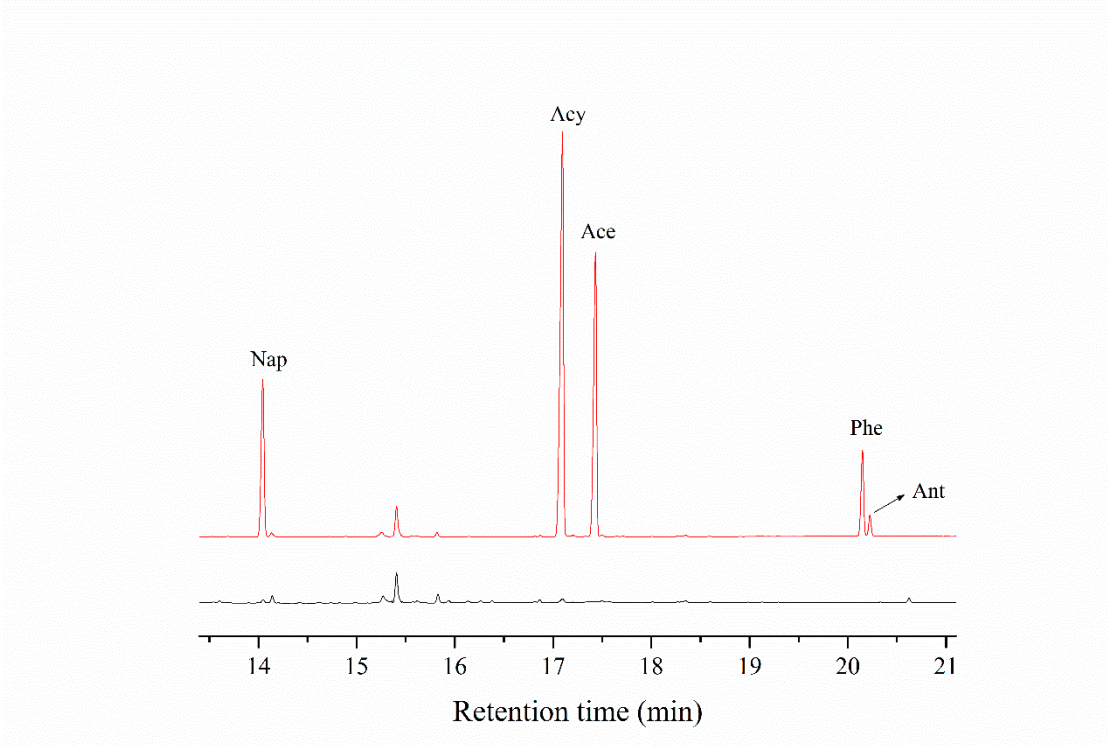

Figure S4. Chromatograms for river water (bottom curve) and spiked river water (top curve, spiked concentration: 5 μg/L).

Table S1. Extraction characteristics of copolymer coating for various analytes

Analytes	Non-polar compounds							Polar compounds	
	With Pha						Without Pha	With Pha	Without Pha
	Nap	Acy	Ace	Phe	Ant	toluene	tridecane	Benzyl alcohol	dodecanol
EFs	20993	24056	13336	7193	2980	3084	36297	168	17064

[a] Ph:benzene ring

Table S2. Analytical performance of GC-FID for analyzing PAHs using PIL coated fiber

Analyte	Regression Equation	LRs(μg/L)	r	LODs(μg/L)	Repeatability (RSDs,%)	
					Single-fiber(n=5)	Fiber to fiber(n=5)
Nap	y = 38.02 x - 30.05	0.1-100	0.9994	0.009	6.1	5.6
Acy	y = 64.29 x + 36.61	0.1-100	0.9990	0.003	11.1	8.7
Ace	y = 28.79 x + 40.01	0.1-100	0.9987	0.003	4.8	5.1
Phe	y = 11.02 x + 3.53	0.1-100	0.9995	0.011	11.9	9.8
Ant	y = 11.64 x - 5.55	0.5-50	0.9999	0.026	8.9	7.5