Electronic Supplementary Material (ESI) for RSC Advances.

SUPPORTING INFORMATION

Disposable ionic liquid-coated etched stainless steel fiber for headspace solid-phase microextraction of organophosphorus flame retardants from water samples

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The preparation of IL-coated fused-silica SPME fiber

With regard to the preparation of IL-coated fused-silica SPME fiber, the protective polyimide layer of a 1 cm segment of a 10 cm fused-silica fiber was removed using microflame torch [42] prior to coating. The fiber was then washed with methanol and dichloromethane successively, and conditioned at 160◦C under nitrogen for 2 min in the GC injection port and then cooled to room temperature. The other coating procedure was same with the above-mentioned coating process of the IL-coated etched stainless steel fiber.

Chromatographic conditions

The column temperature was programmed as follows: initial oven temperature 80 °C (held for 1 min), increased to 140 °C at a rate of 20 °C min^{-1} (held for 2 min), and then increased to 280 °C at a rate of 4 °C min^{-1} (held for 6 min). Both injector and detector temperatures were set at 250 °C. Helium (99.999%) was used as the carrier gas at a constant flow of 1.5 mL min^{-1}, and nitrogen (99.999%) was used as the make-up gas at a flow rate of 20 mL min^{-1}. Synthetic air (99.995%) and hydrogen (99.999%) were used as detector gases at flows of 100 and 65 mL min^{-1}, respectively.

Figure S1. Effect of extraction time on extraction efficiency of the PFRs. Other experiment conditions: extraction temperature, 60 °C; stirring speed, 600 rpm; the concentration of salt, 30% (w/v); desorption time, 5 min.

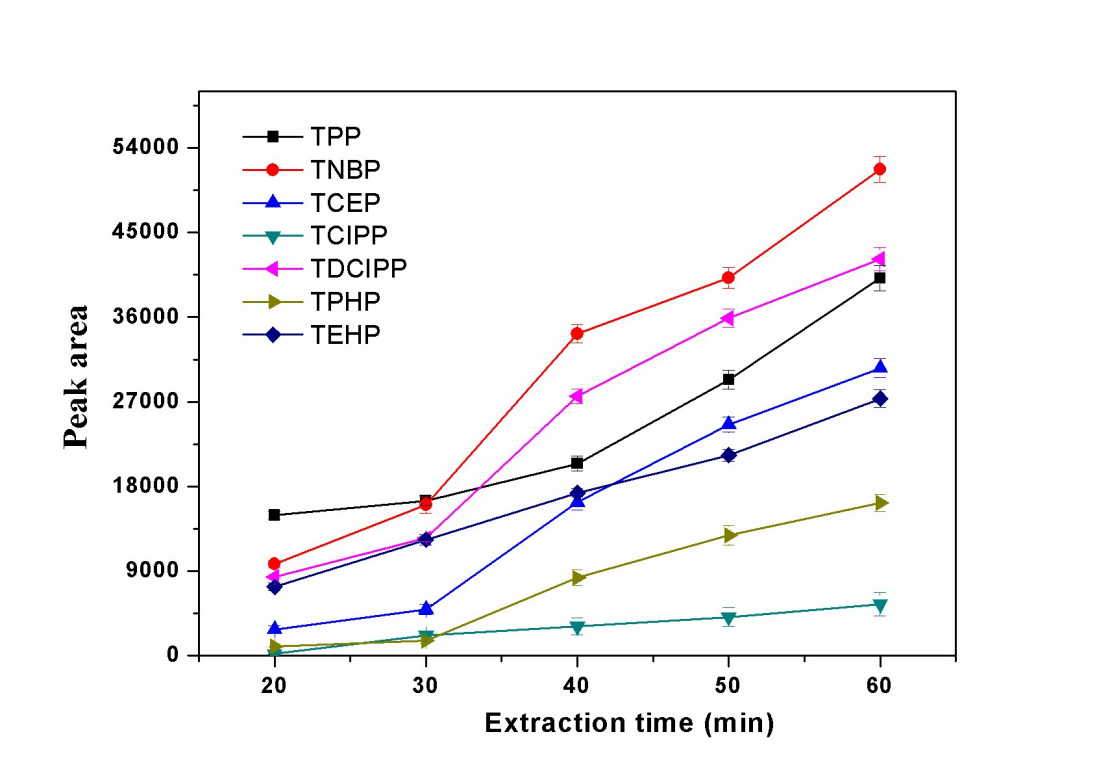


Figure S2. Effect of extraction temperature on extraction efficiency of PFRs. Other experiment conditions: extraction time, 40 min; stirring speed, 600 rpm; the concentration of salt, 30% (w/v); desorption time, 5 min.

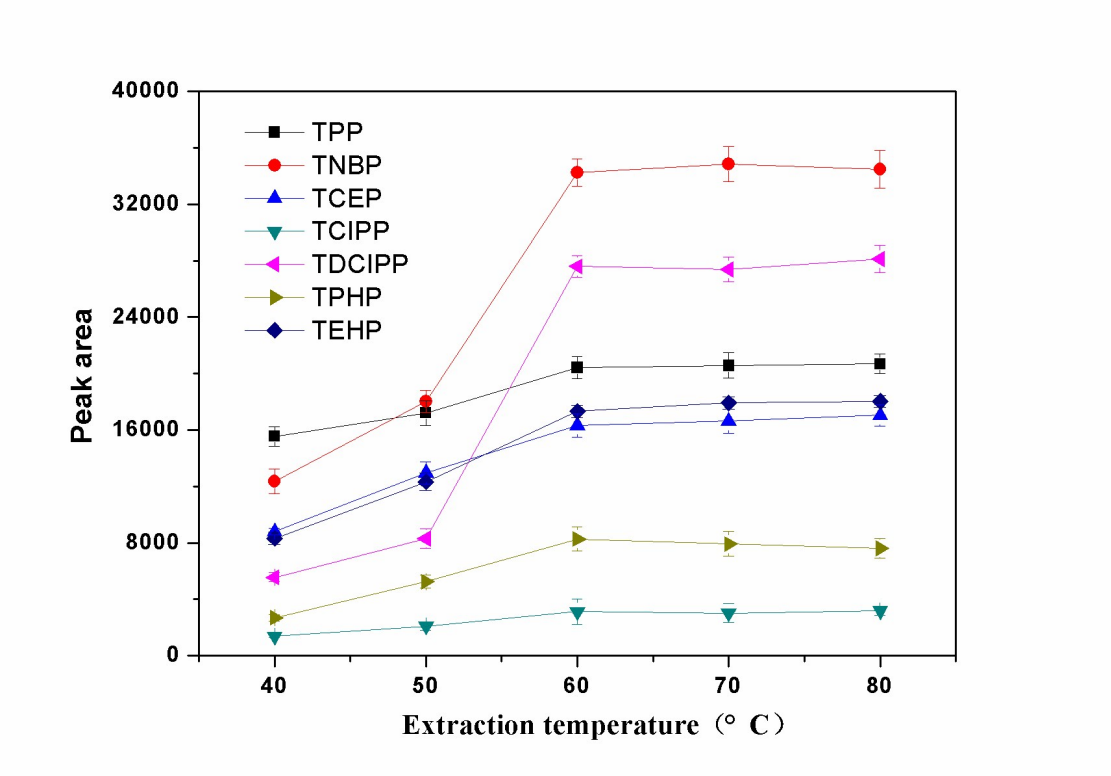


Figure S3. Effect of stirring speed on extraction efficiency of PFRs. Other experiment conditions: extraction time, 40 min; extraction temperature, 60 °C; the concentration of salt, 30% (w/v); desorption time, 5 min.

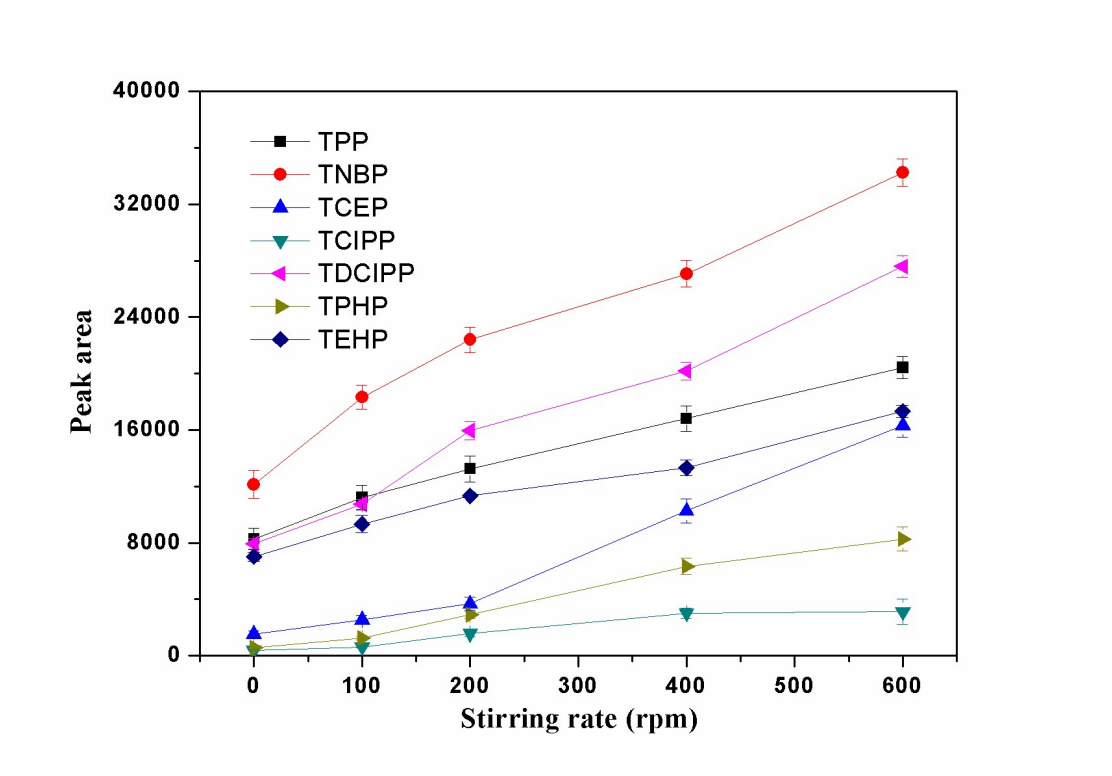


Figure S4. Effect of the addition of salt on extraction efficiency of PFRs. Other experiment conditions: extraction time, 40 min; extraction temperature, 60 °C; stirring speed, 600 rpm; desorption time, 5 min.

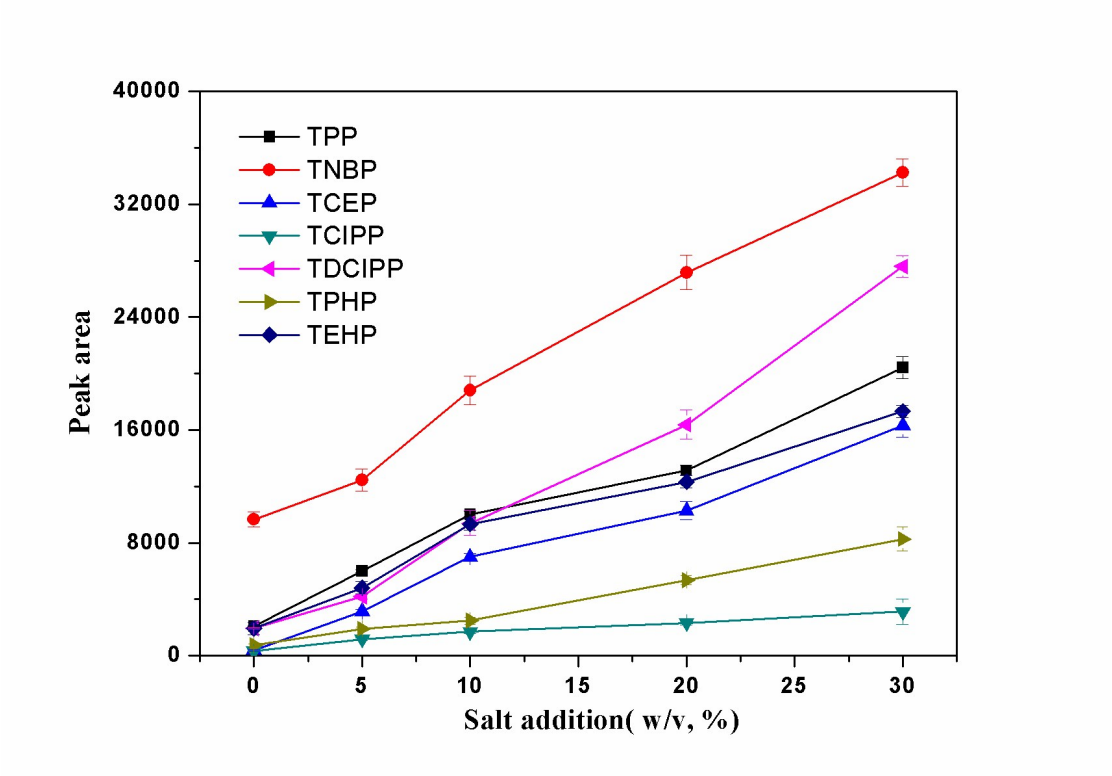


Figure S5. Effect of desorption time on extraction efficiency of PFRs. Other experiment conditions: extraction time, 40 min; extraction temperature, 60 °C; stirring speed, 600 rpm; the concentration of salt, 30% (w/v).

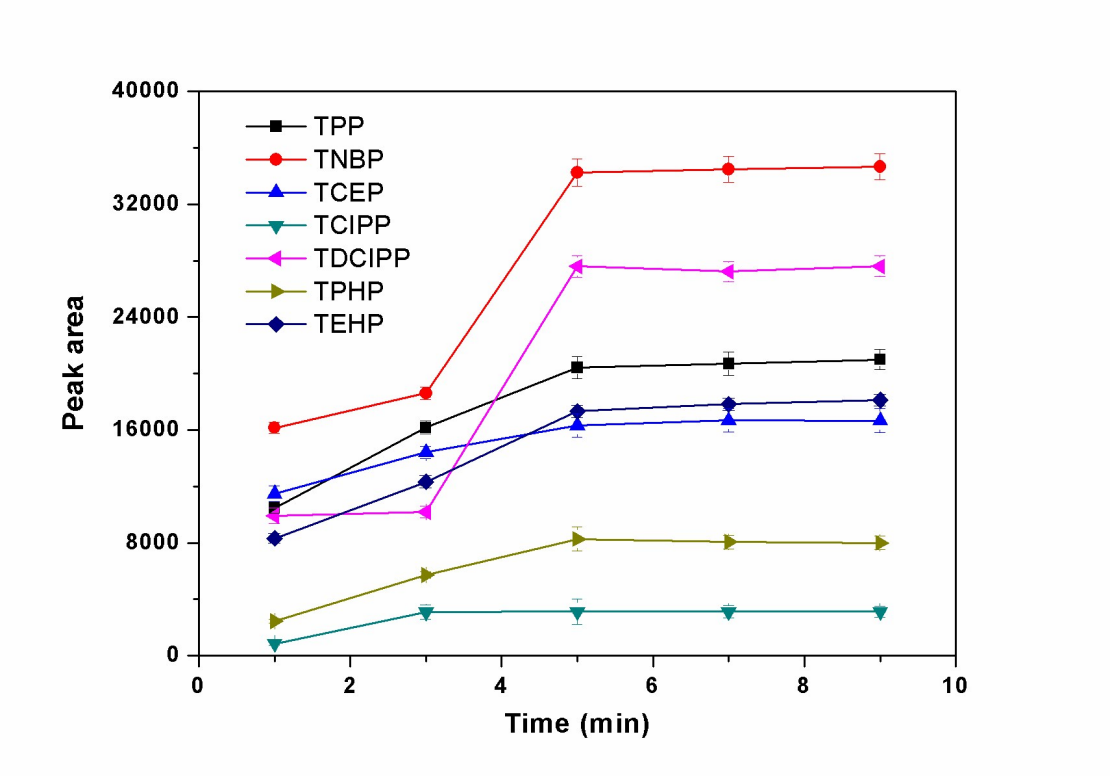
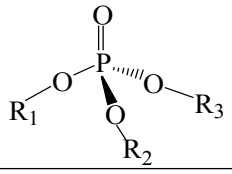
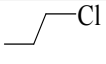
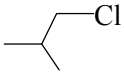
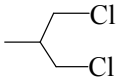
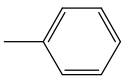
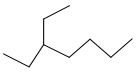


Table S1

Physicochemical properties of eight OPEs.



Compound	Substituents	log K_{ow}[a]	Solubility in water (mg/L)
TCEP	R_1=R_2=R_3= 	1.44	7.0×10^3
TPP	R_1=R_2=R_3= 	1.87	827
TCIPP	R_1=R_2=R_3= 	2.59	1.6×10^3
TDCIPP	R_1=R_2=R_3= 	3.8	1.50
TNBP	R_1=R_2=R_3= 	4.00	280
TPHP	R_1=R_2=R_3= 	4.59	7.4×10^{-2}
TEHP	R_1=R_2=R_3= 	9.49	0.6

[a] Data taken from Syracuse Research Corporation database of physico-chemical properties (http://www.syrres.com/eSc/physdemo.htm).