Electronic Supplementary Information

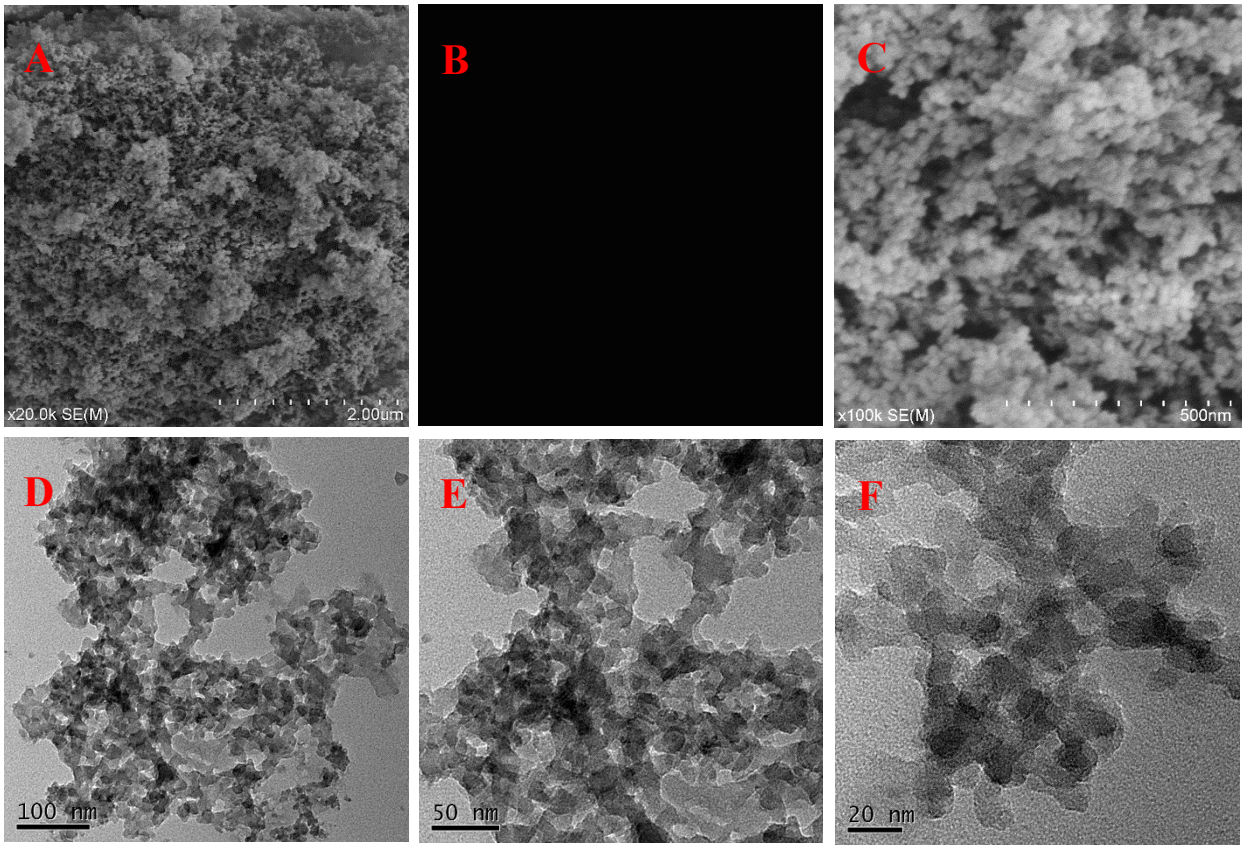

Fig. S1. The scanning electron microscopy (A-C) and the transmission electron microscopy (D-F) images of the as-synthesized mPMF nanoparticles.

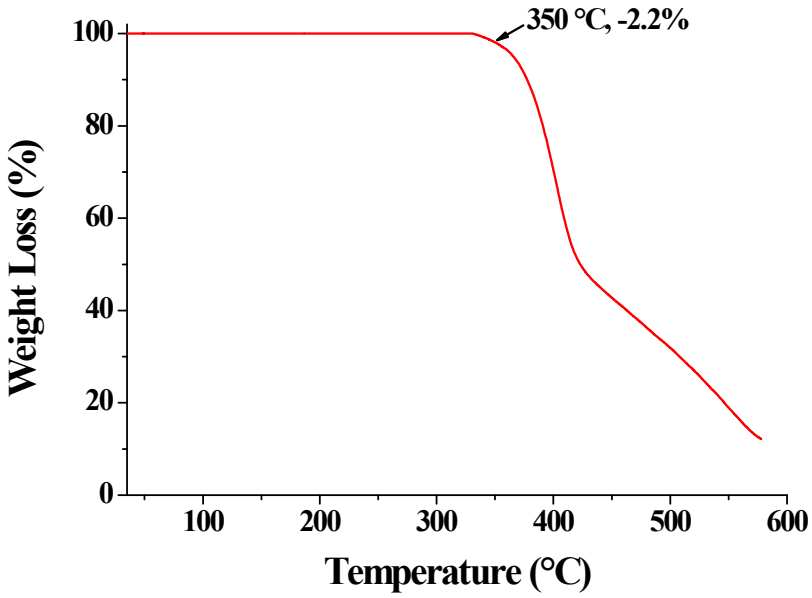

Fig. S2. TGA curves of the mPMF nanoparticles coating.

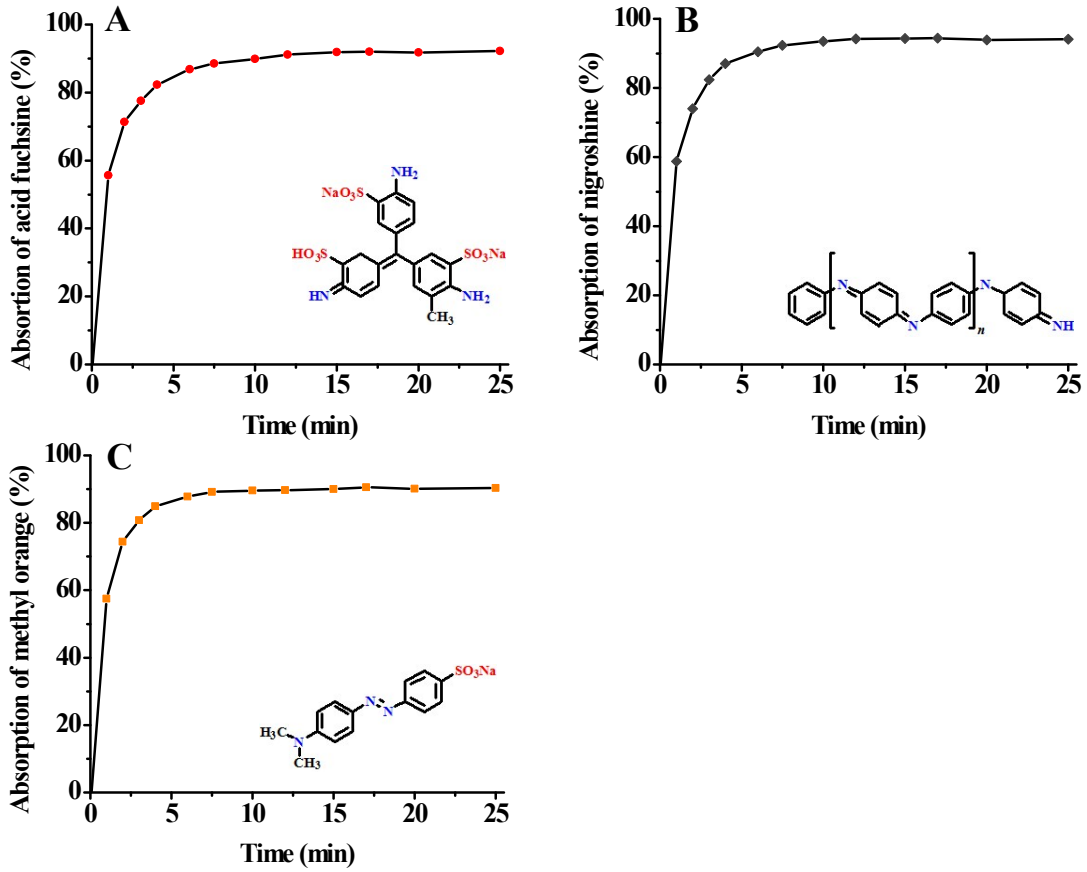

Fig. S3. The adsorption kinetics of the mPMF nanoparticles toward acid fuchsine (A), nigrosine (B), and methyl orange (C) obtained by UV-vis analysis.

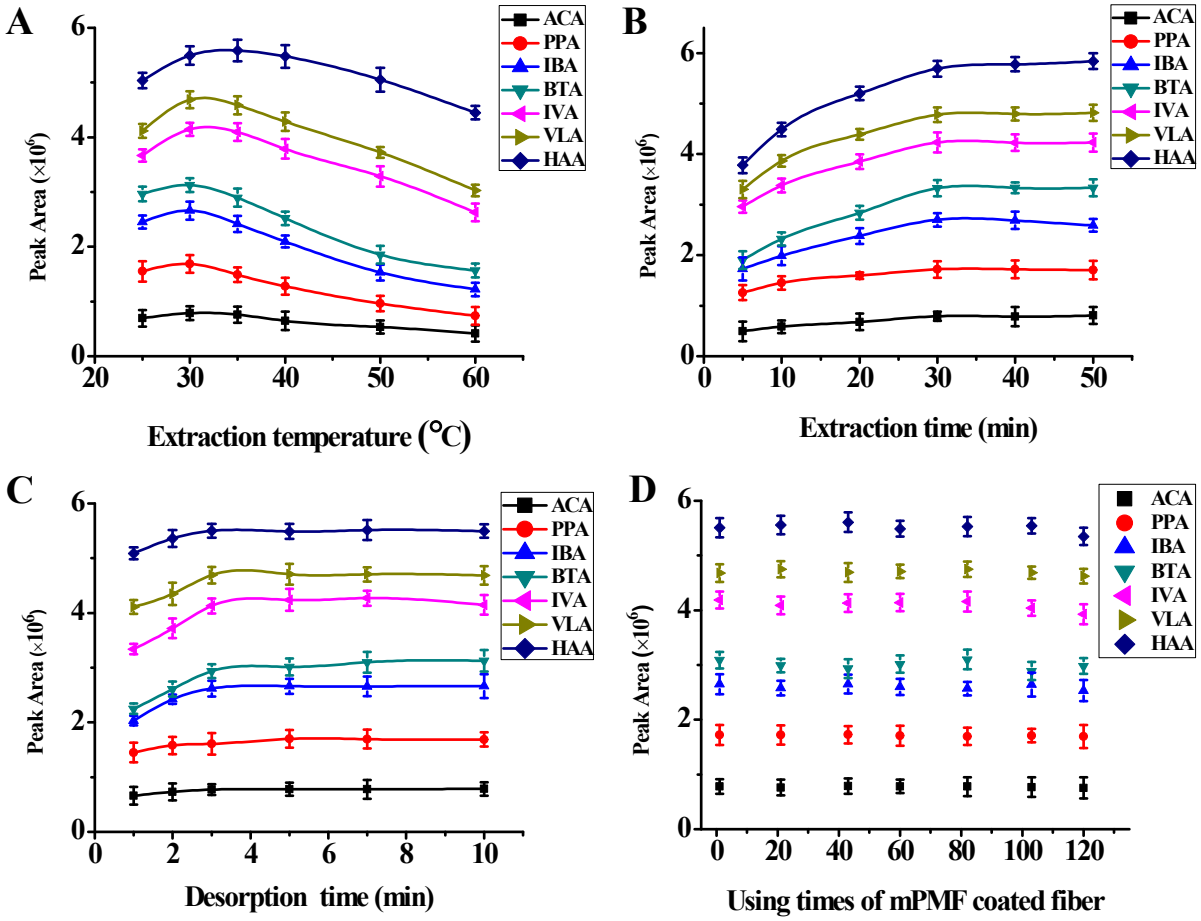

Fig. S4. Parameters affecting the extraction efficiency of the mPMF coated fiber: extraction temperature (A), extraction time (B), desorption time (C), and durability of the mPMF coated SPME fiber (D). VFAs: acetic acid (ACA), propionic acid (PPA), isobutyric acid (IBA), butyric acid (BTA), isovaleric acid (IVA), valeric acid (VLA), and hexanoic acid (HAA).

Table S1 Comparison of the present method with other SPME methods for the enrichment of VFAs

Coatings[a]	Analytical Methods	Samples	Linear ranges (μg L^{-1})	LODs (μg L^{-1})	Repeatability	References
CAR/PDMS	GC-MS	Waste waters	10-820	2-150	9-16	21a
CAR/PDMS	GC-FID	Waste waters	10-5785	6-675	5.6-13.3	21b
CAR/PDMS	GC-FID	Cheeses	30-2000	20-24	17-18	21c
PILs	GC-FID	Cheeses	30-2000	6.5-16	7.6-10	21c
PA	GC-MS/MS	Wines	0-5.04	3-257	0.59-3.97	21d
PA	GC-FID	Milk	-	0.10-1.60 ppm	3.3-7.7	21e
DVB/CAR/PDMS	GC-FID or GC-MS	Rat feces	10-560	5-4910	4.5-14.7	21f
SNW-1	GC-MS	Tea leaf and tobacco shred	0.05-10	0.014-0.026	4.3-9.2	1
mPMF	GC-MS	Environmental waters	0.04-5	0.012-0.040	6.1-9.4	This work

[a]CAR/PDMS: carboxen-polydimethylsyloxane; PILs: polymeric ionic liquids, ViC_6Im-Cl monomer combined with $(ViIm)_2C_{12}$-2Br or $(ViIm)_2C_8$-2Br cross-linkers; PA: polyacrylate; DVB/CAR/PDMS: divinylbenzene/carboxen/polydimethylsiloxane; SNW-1: Schiff base network-1.