

## Supplementary Materials

The fabrication of a novel polyacrylonitrile/reduced graphene oxide-amino-halloysite/bimetallic metal–organic framework electrospun nanofiber adsorbent for the ultrasonic-assisted thin-film microextraction of fatty acid methyl esters in dairy products with gas chromatography-flame ionization detection

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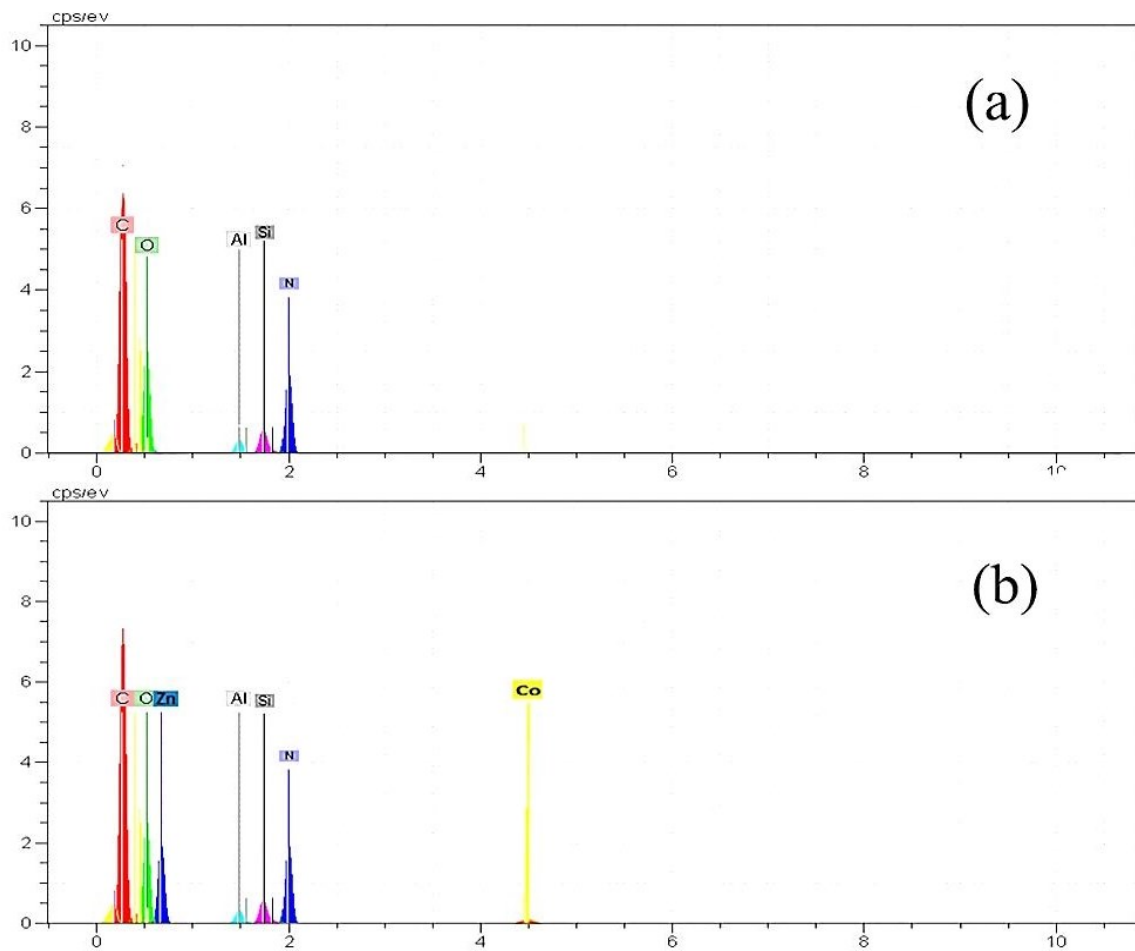
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Fig 2S. X-ray diffraction patterns of (a) reduced graphene oxide (b) bimetallic ZIFs (Co<sub>x</sub>-Zn<sub>1-x</sub>)(Melm)<sub>2</sub> metal-organic framework (c) rGO-amino-HNT/ (Co<sub>0.5</sub> Zn<sub>0.5</sub> (Melm)<sub>2</sub>) nanocomposite.

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**Fig. 1S** EDS spectra of (a), HNT (b) rGO-amino-HNT/  $(\text{Co}_{0.5}\text{Zn}_{0.5}(\text{MeIm})_2)$  nanocomposite

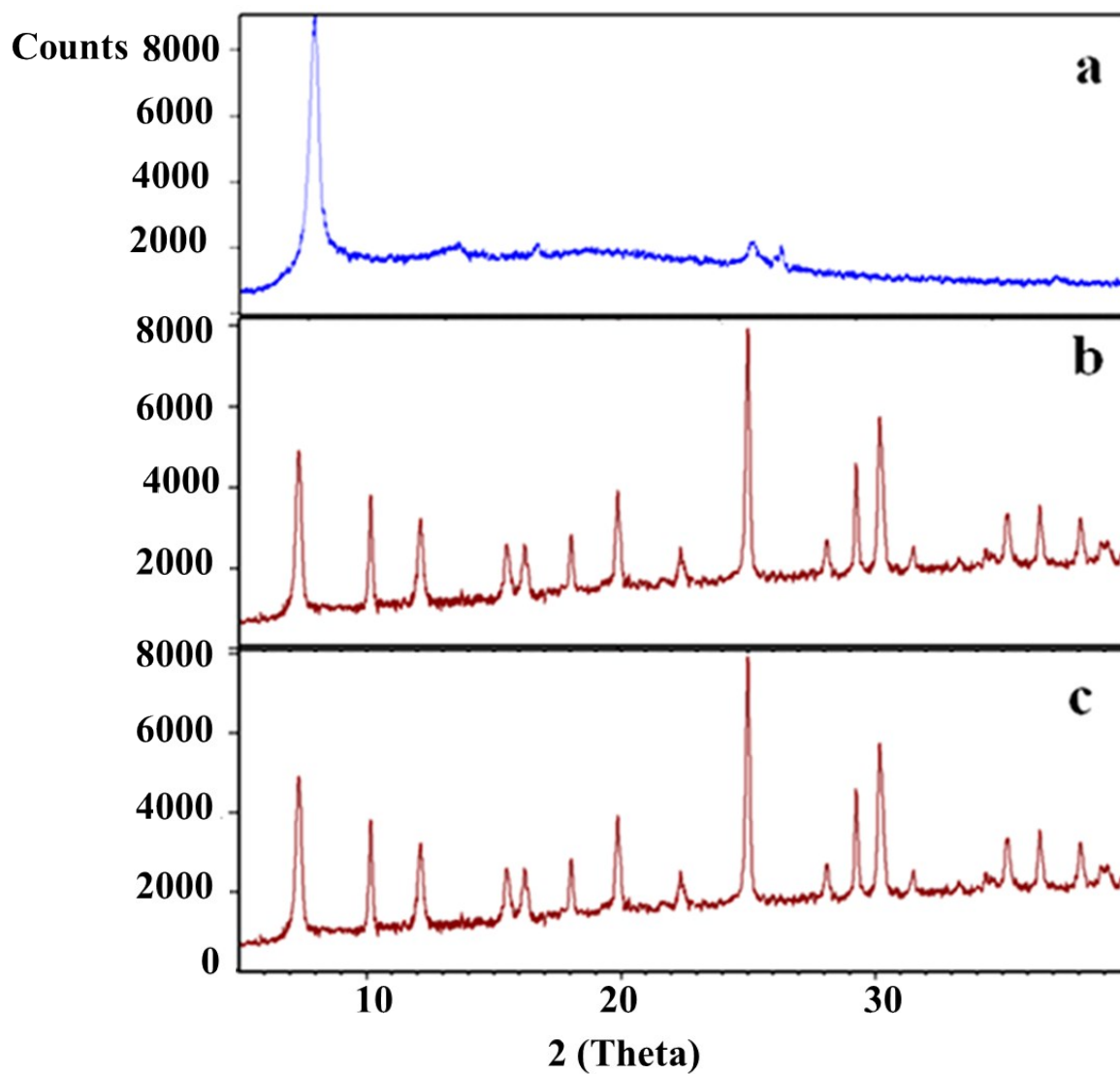
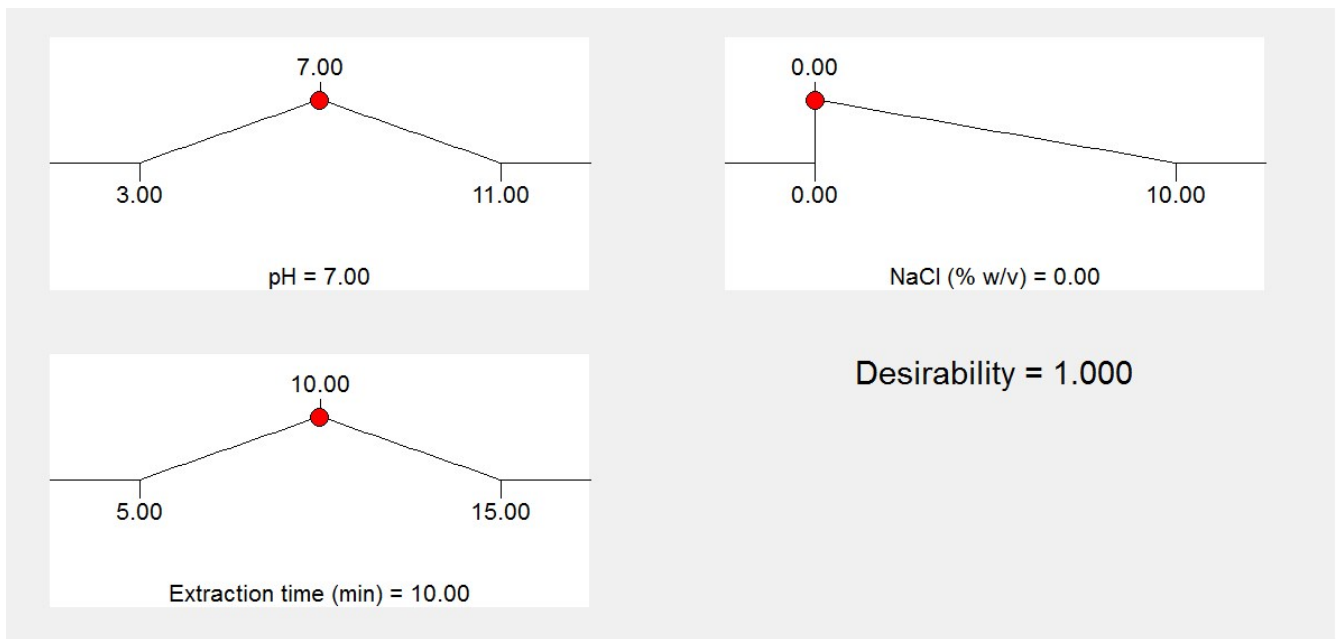
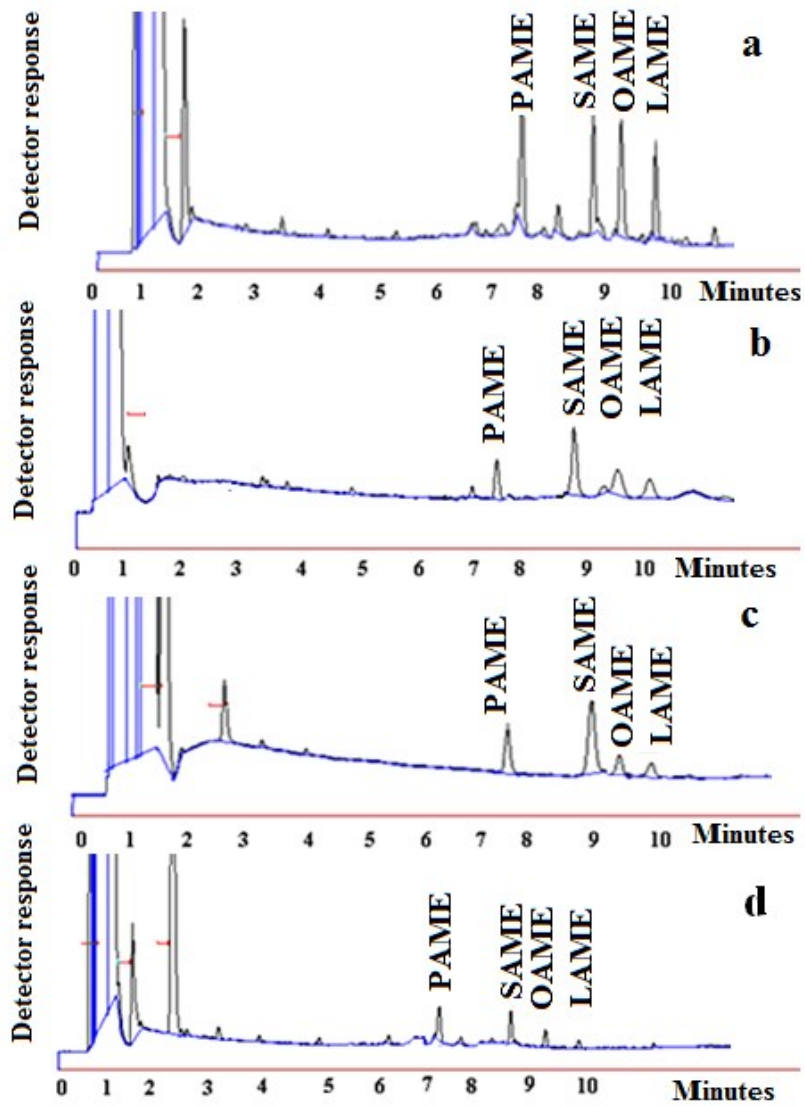


Fig .2S X-ray diffraction patterns of (a) reduced graphene oxide (b) bimetallic ZIFs ( $\text{Co}_x\text{Zn}_{1-x}(\text{Melm})_2$ ) metal-organic framework (c) rGO-amino-HNT/ ( $\text{Co}_{0.5}\text{Zn}_{0.5}(\text{Melm})_2$ ) nanocomposite



**Fig. 35** Desirability ramp for the numerical optimization of three goals, namely the pH, NaCl (%w/v) and Extraction time (min)



**Fig. 4S** Chromatograms of (a) standard solution of fatty acids methyl esters in n-hexane and unspiked: (b) milk, (c) yogurt and (d) yogurt soda.

**Table S1** The amount of detected of FAME in dairy products using the proposed TFME-GC-FID method

Sample	Concentration (mg kg <sup>-1</sup> )			
	PAME	SAME	OAME	LAME
Milk	47.35	55.76	28.48	<b>19.52</b>
Yogurt	42.62	51.48	18.36	<b>9.56</b>
Cheese	38.63	43.58	16.85	<b>11.85</b>
Yogurt soda	17.59	22.61	8.47	<b>7.75</b>
Butter	63.58	68.43	25.85	<b>22.57</b>

