Supplementary Data

For

Quartz crystal microbalance determination of acephate based on molecularly imprinting polymer and sulphur doped copper ferrites

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2.1. Chemicals and instrumentation

Scanning electron microscopy (SEM, ZEISS EVO 50 SEM, Tokyo, Japan), Fourier Transform Infrared Spectroscopy (FTIR, Bruker Optics Inc., Ettlingen, Germany), X-ray photoelectron spectroscopy (XPS, PHI 5000 Versa Probe spectrometer), and Rigaku X-ray diffractometer (XRD, Germany) were used for the structural characterizations. Nano magnetics instrument mode atomic force microscopy (AFM, Tokyo, Japan) was used for the observation of surface thicknesses and INFICON Acquires Maxtek QCM system was utilized for analytical applications.

3.4. Sensitivity of MIP/S@$CuFe_2O_4$/QCM

$$LOQ = 10.0\ S / m$$

$$LOD = 3.3\ S / m$$

S: Standard deviation of the intercept and m: Slope of the regression line

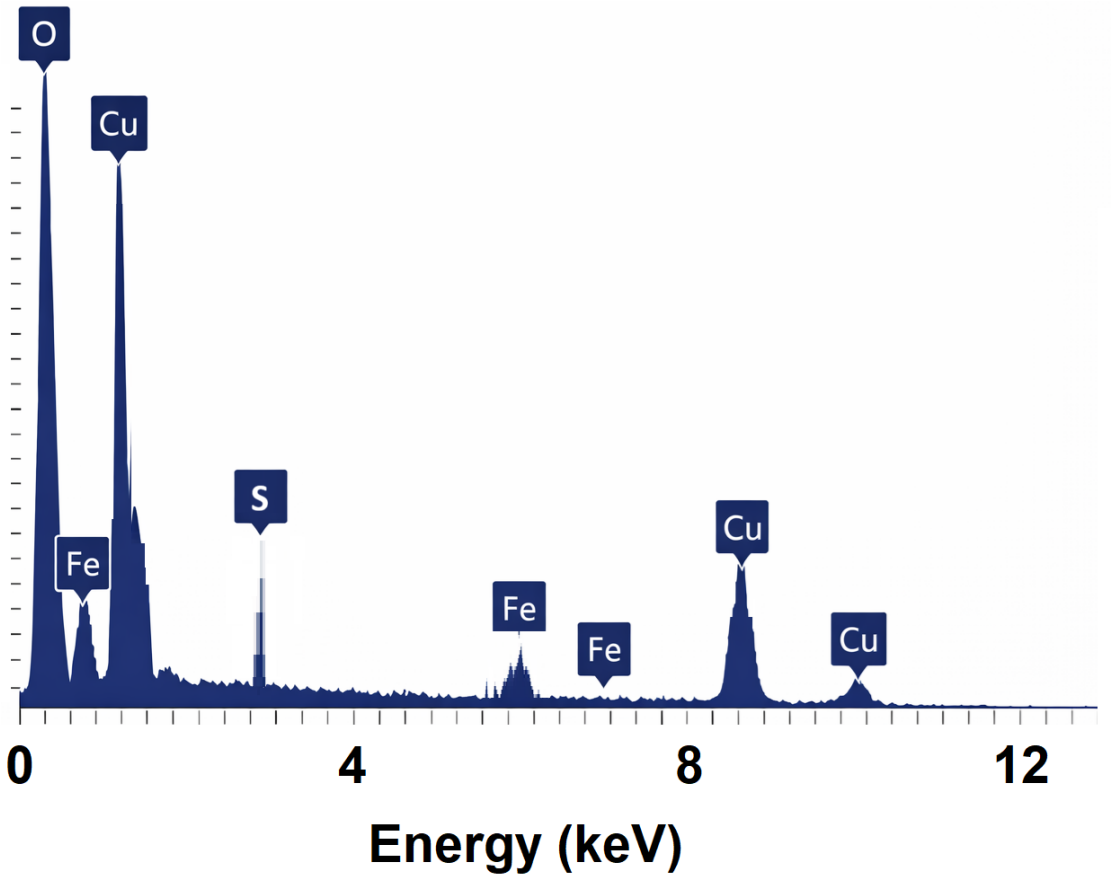

Fig. S1. EDX analysis of S@$CuFe_2O_4$ nanoparticles

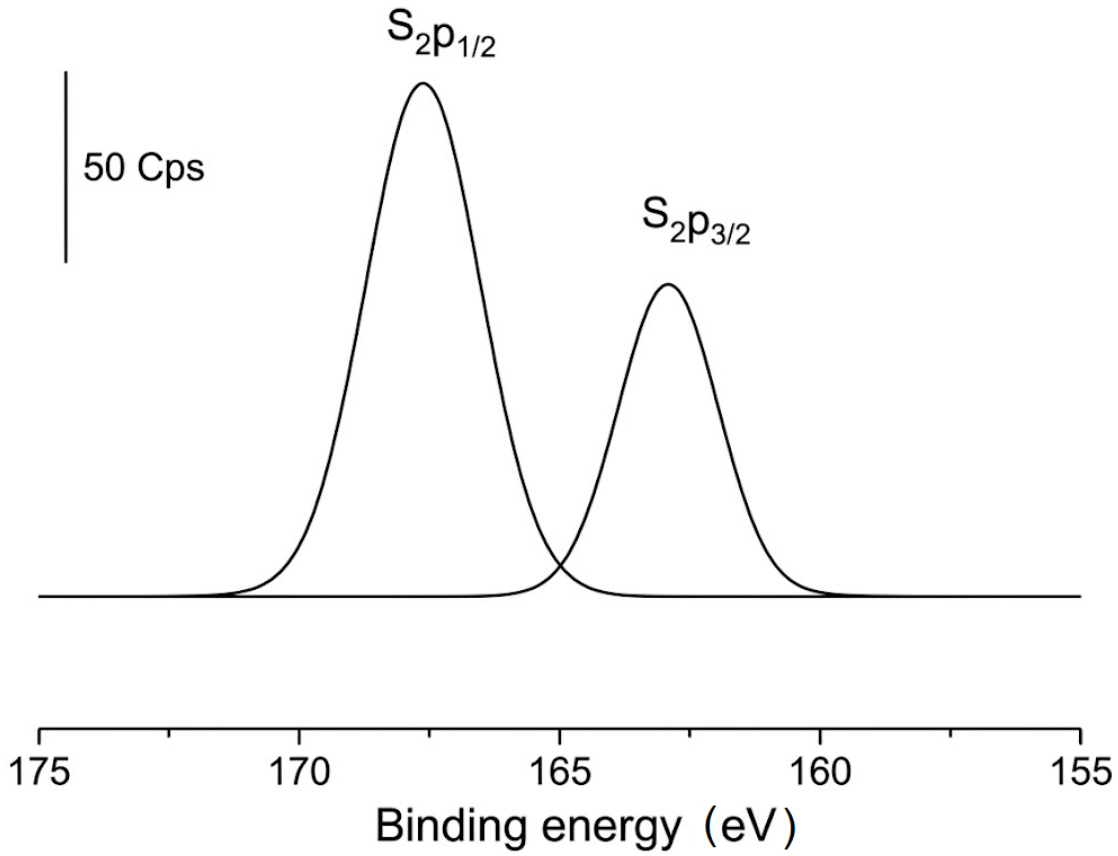

Fig. S2. The narrow region XPS spectra of S@$CuFe_2O_4$/QCM chip for the deconvolution spectra of S2p

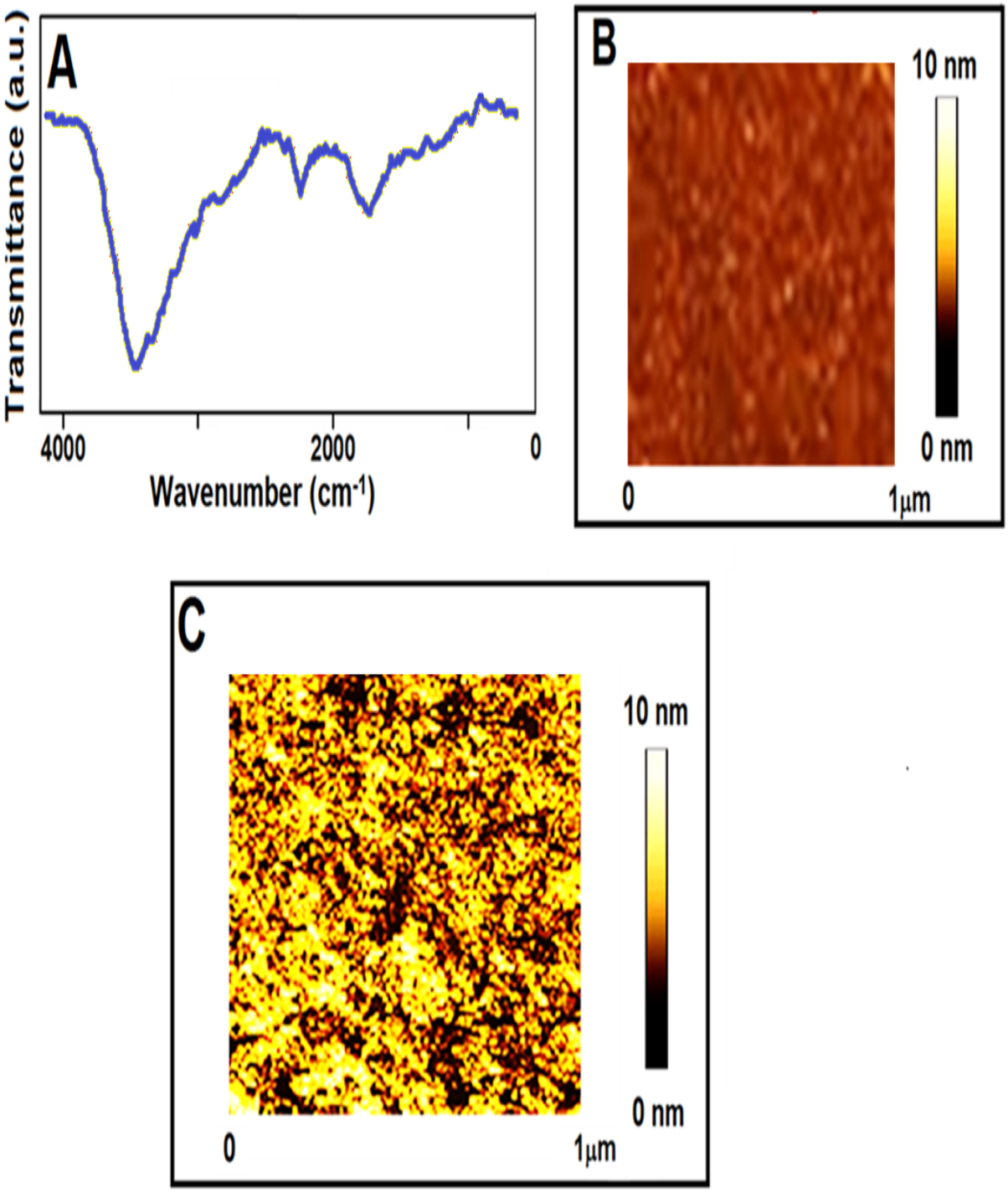

Fig. S3. (A) FTIR spectra of ACE-imprinted film on S@$CuFe_2O_4$/QCM with ACE removal; AFM images of (B) bare QCM chip and (C) ACE-imprinted film on S@$CuFe_2O_4$/QCM with ACE removal

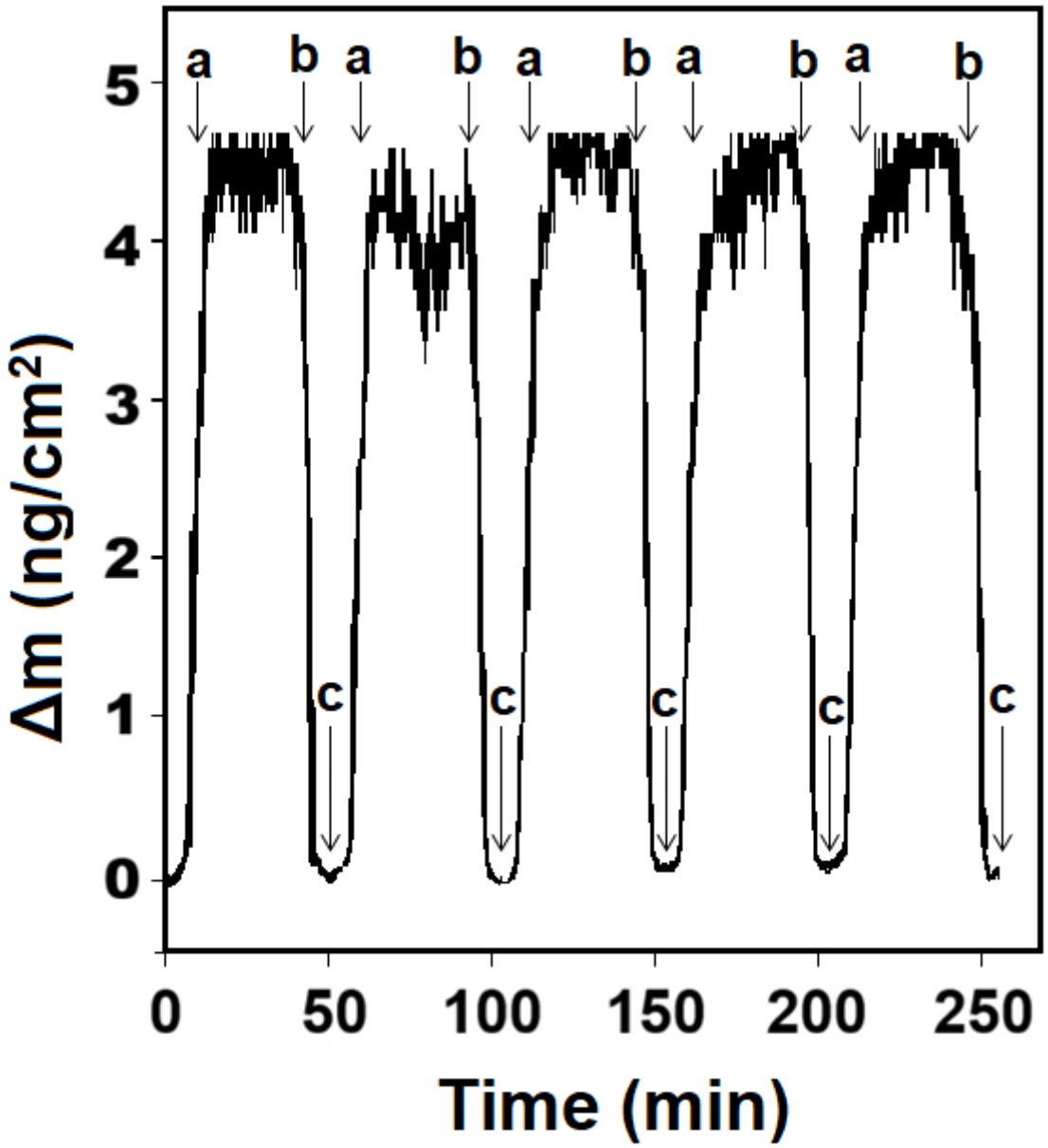

Fig. S4. Repeatability of MIP/S@$CuFe_2O_4$/QCM chip: (a) adsorption; (b) desorption; (c) regeneration

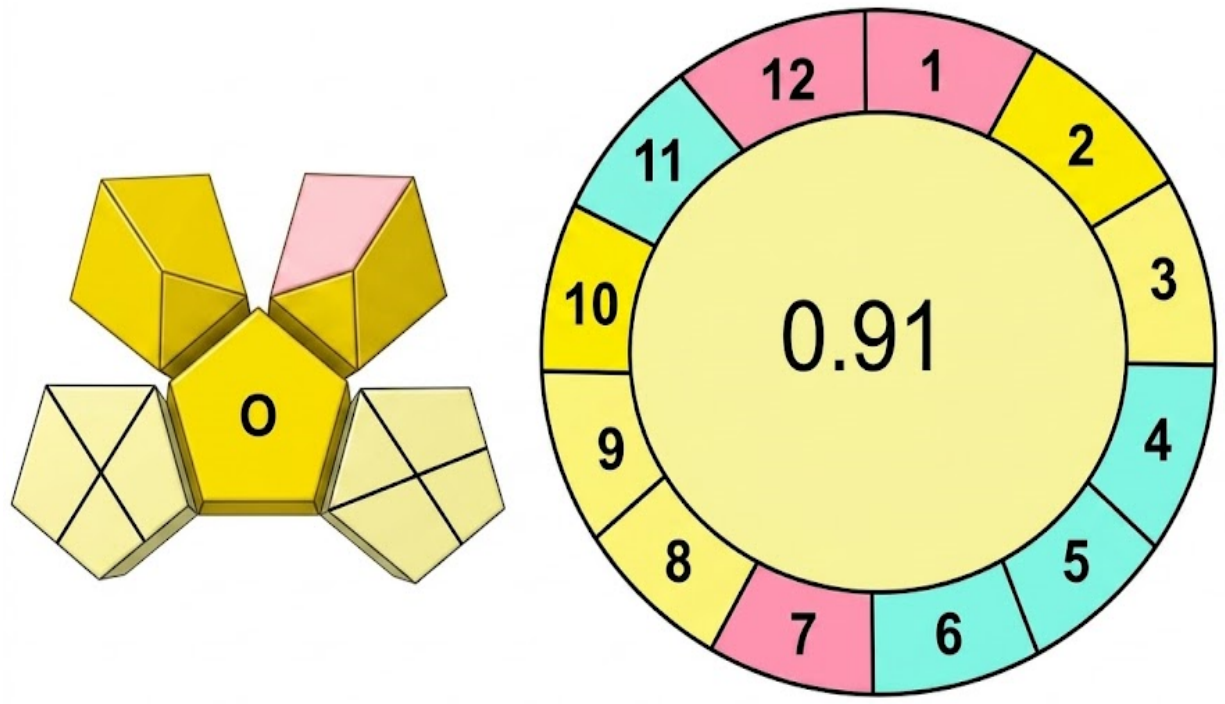

Fig. S5. Method greenness assessment tools pictograms

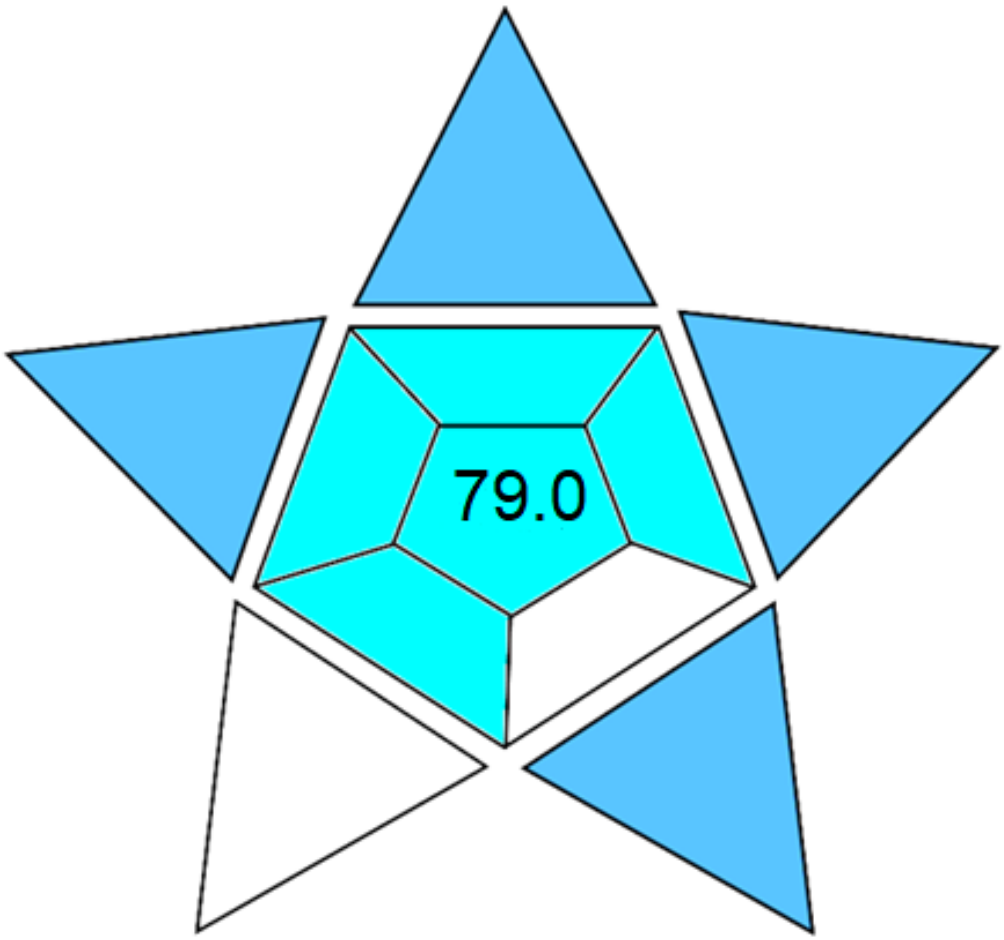

Fig. S6. Practicality assessment of MIP/S@$CuFe_2O_4$/QCM chip using BAGI tools

Table S1. k and k′ values of MIP/S@$CuFe_2O_4$/QCM chip and NIP/S@$CuFe_2O_4$/QCM chip (*n*=6)

	MIP		**NIP**		
	Δm (ng cm^{-2})	**k**	**Δm (ng cm^{-2})**	**k**	**k′**
ACE	5.50 ± 0.01	-	0.100 ± 0.003	-	-
MAL	0.30 ± 0.01	18.33	0.020 ± 0.001	5.00	3.67
TRI	0.20 ± 0.02	27.50	0.010 ± 0.002	10.00	2.75
CHL	0.10 ± 0.03	55.00	0.005 ± 0.004	20.00	2.75

Analyte concentrations: 5.0 nmol L^{-1} ACE, 5.0 nmol L^{-1} MAL, 5.0 nmol L^{-1} TRI, and 5.0 nmol L^{-1} CHL