

## Supplementary Materials

**Table S1.** Critical Micelle Concentration of Few Surfactants

Ionic charge	Trade name	CMC (mM)	Reference
Cationic	CPC	0.90	[1]
Cationic	CTAB	0.92	[2]
Cationic	ODA	0.90	[3]
Cationic	BC	5.0	[2]
Anionic	SDS	8.27	[4]
Anionic	SDBS	1.5	[5]
Anionic	Calfax 16	0.601	[6]
Non-ionic	Glucopan 215 CS UP	0.427	[7]
Non-ionic	Plant care	0.026	[6]
Non-ionic	Tergitol NP 40	0.045	[8]
Non-ionic	Triton X 100	0.0928	[9]
Non-ionic	Triton X 114	0.265	[9]
Non-ionic	Tween 80	0.30	[10]
Non-ionic	Brij35	0.28%	[11]
Non-ionic	OP10	0.1 g/L	[12]

**Table S2.** Selected Studies of Ligand Combined MEUF Process

Ions	Surfactants	Ligands	Removal %	Reference
Cu <sup>2+</sup>	CTAB, Brij58	PIPD	99.9	[13, 14]
Cu <sup>2+</sup>	CTAB, Brij58	NDA	99.2	[15]
Cu <sup>2+</sup>	CTAB, Brij58	C <sub>8</sub> T <sup>f</sup>	> 99	[16]
Au(III)	SDS	PADA	> 99	[17]
Pd(II)	SDS	PADA	98	[18]
UO <sub>2</sub> <sup>2+</sup>	CTAB	Bz-Tyr-2-O (1mM TOPO)	67 (88 TOPO)	[19]

**Table S3.** Previous Studies on Heavy Metals Removal with Application of MEUF-ACF

Ions	Surfactants	M, Removal %	S, Removal %	Reference
Chromate	CPC	98.6	99.9	[20]
Cu <sup>2+</sup>	SDS	98	98	[3]
Cd <sup>2+</sup>	SDS	99.6	91	[21]
Ni <sup>2+</sup>	SDS	99.3	78.8	[22]
Zn <sup>2+</sup>	SDS	99.9	78.8	[22]

M = metal ion, S = surfactant

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