

## Supplementary Information

### **Carboxymethyl cellulose-Poly-m-phenylenediamine composite membrane for gold recovery from e-waste**

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**Table S1.** Cost of preparing one kilogram CMC-PmPD composite membrane.

Raw Materials	Usage	Unit Price (\$)	Cost (\$)
glycerol	0.385 L	8.78	3.38
CMC-Na	0.19 Kg	18.2	3.46
deionized water	57.5 Kg	0.28	16.1
Poly-aluminum chloride	5.08 Kg	14.38	73.05
PmPD	0.385 Kg	166.51	64
power	4.02 kWh	0.083	0.33
total			160.32

**Table S2.** Comparison of experimental and diffraction data from the ICDD database for Au(III) containing.

No. of Diffraction Line	2 $\theta$ (°) Exp.	2 $\theta$ (°) ICDD	$ \Delta 2\theta $	d <sub>hkl</sub> (Å) Exp.	d <sub>hkl</sub> (Å) ICDD	(hkl)
1	38.3	38.184	0.116	2.349	2.355	(111)
2	44.46	44.392	0.068	2.037	2.039	(200)
3	64.68	64.576	0.104	1.441	1.442	(220)
4	77.72	77.517	0.073	1.229	1.230	(311)