1 **Supporting Information**

2 **For**

3 **Biomineralization-mimetic Preparation of Hybrid Membranes with Ultra-high**

4 **Load of Pristine Metal-Organic Frameworks Grew on Silk Nanofibers for**

5 **Hazards Collection in Water**

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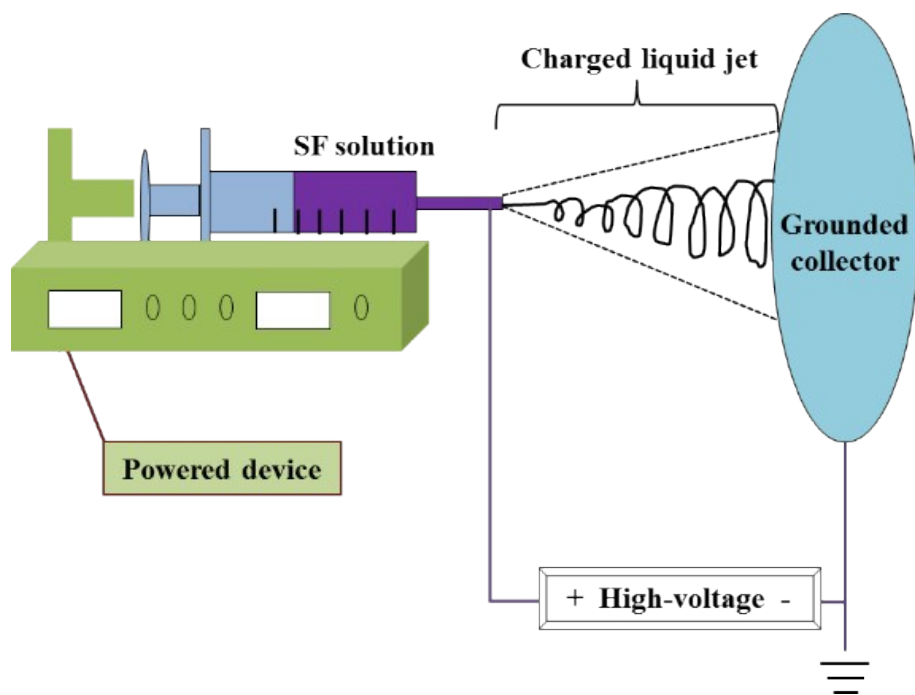13 Fayetteville, AR 72701, USA

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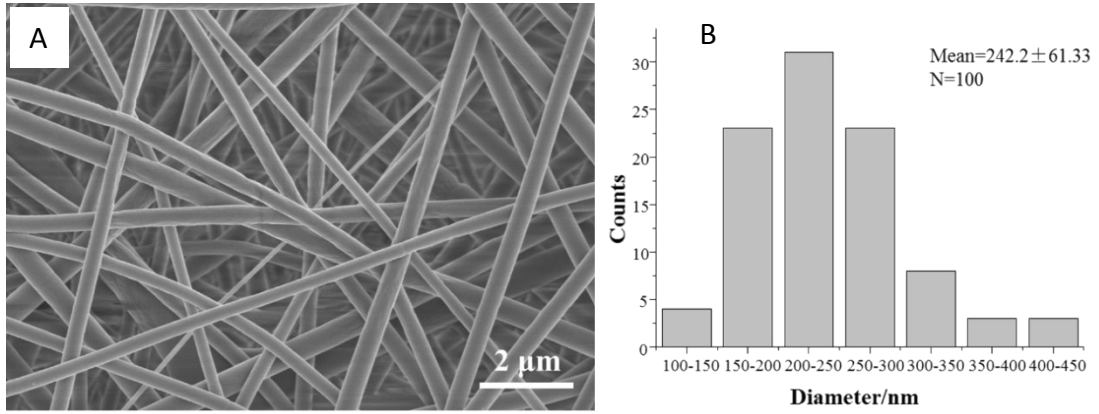18 Tel./Fax: +86 571 88982219.

19 E-mail address: yangm@zju.edu.cn.

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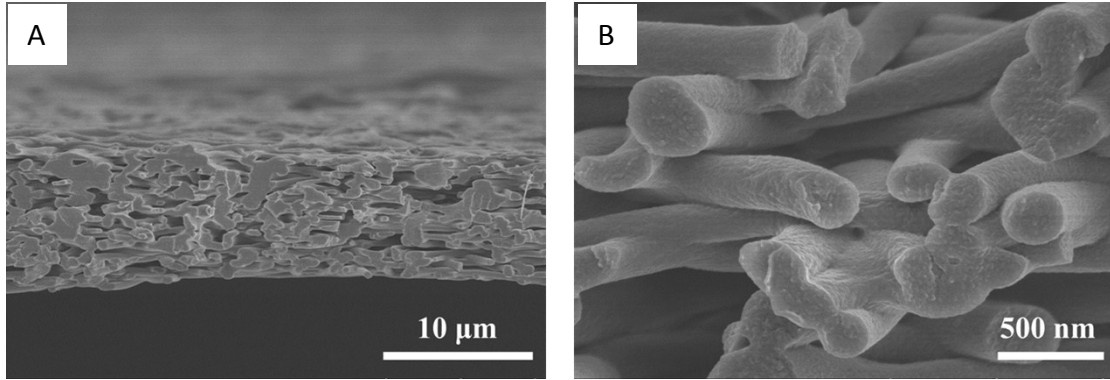21
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24 Scheme S1. Schematic diagram of electrospun setup.
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Figure S1. (A) SEM image of electrospun silk nanofibers. (B) Histograms of electrospun silk nanofiber diameter distribution.
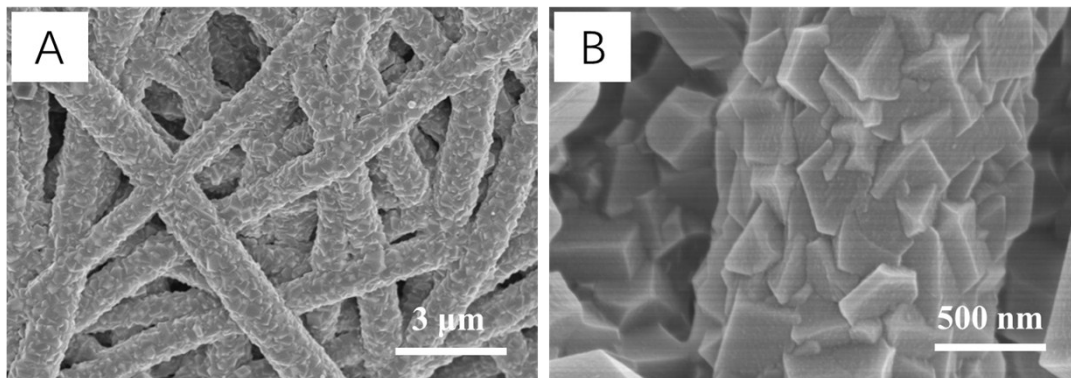
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32 Figure S2. Cross section SEM image (A) of prepared electrospun silk nanofibers and
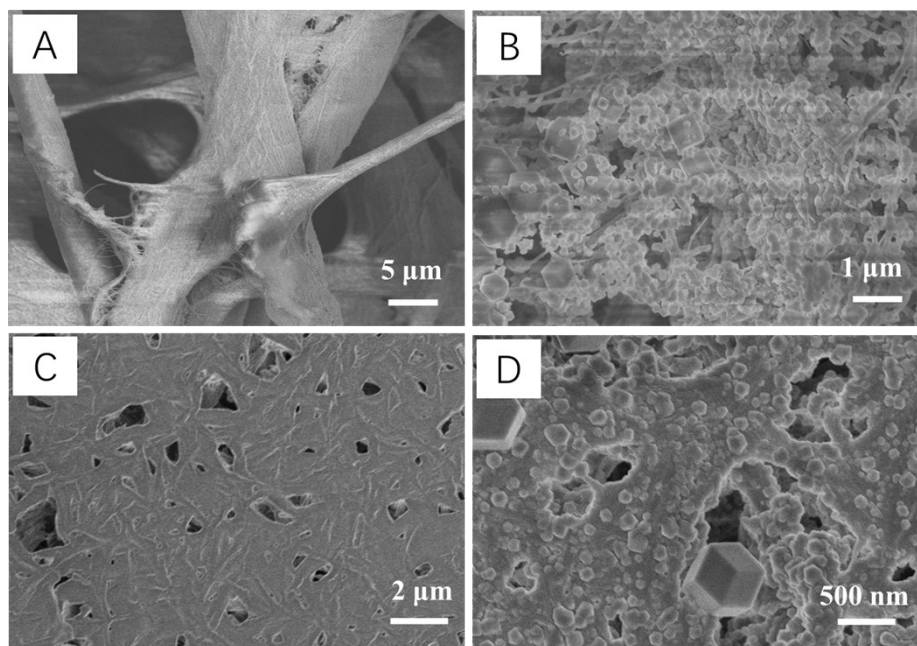33 a magnified part (B).
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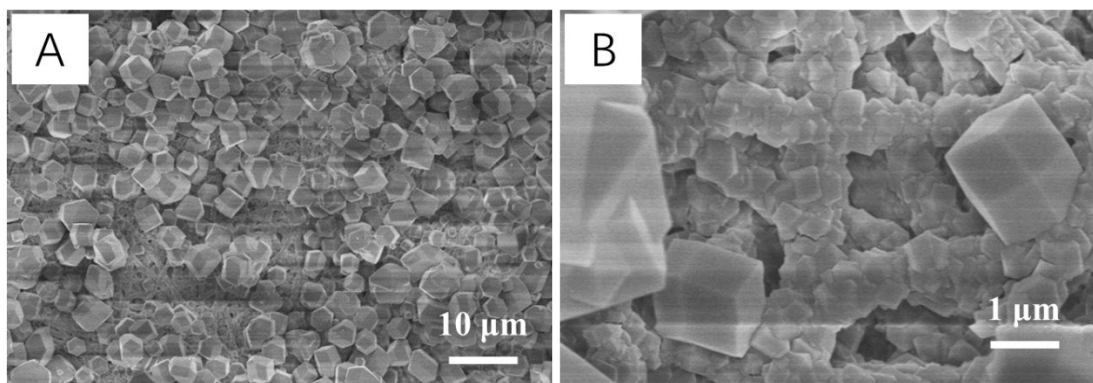38   Figure S3. SEM images of ESF@ZIF-8 (1 h) membrane under different magnifications.
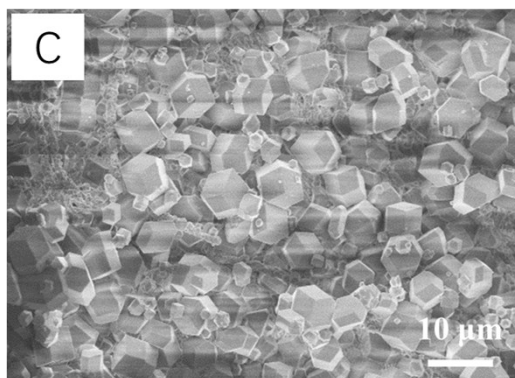
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42 Figure S4. SEM images of commercial cellulose nitrate membrane before (A) and after ZIF-8
43 coating (B), as well as polypropylene membrane before (C) and after (D) ZIF-8 coating.
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49 Figure S5. SEM image of ESF@ZIF-8 under different magnifications (A, B) and ESF@ZIF-67 (C)

50 all prepared in 16-h reaction.
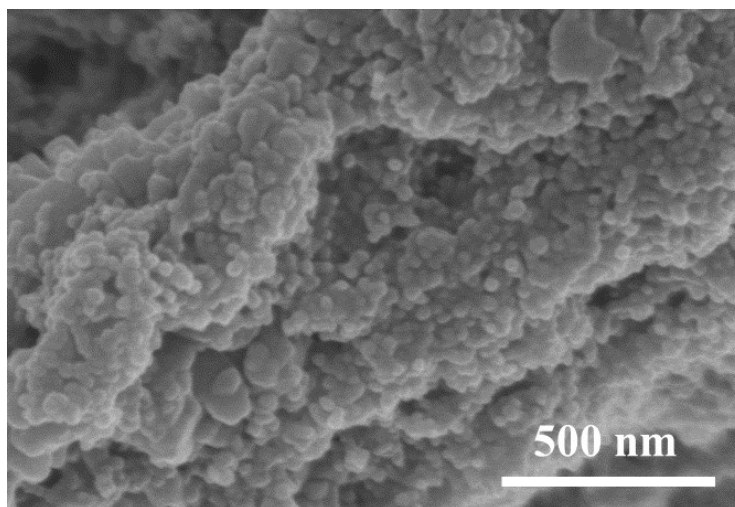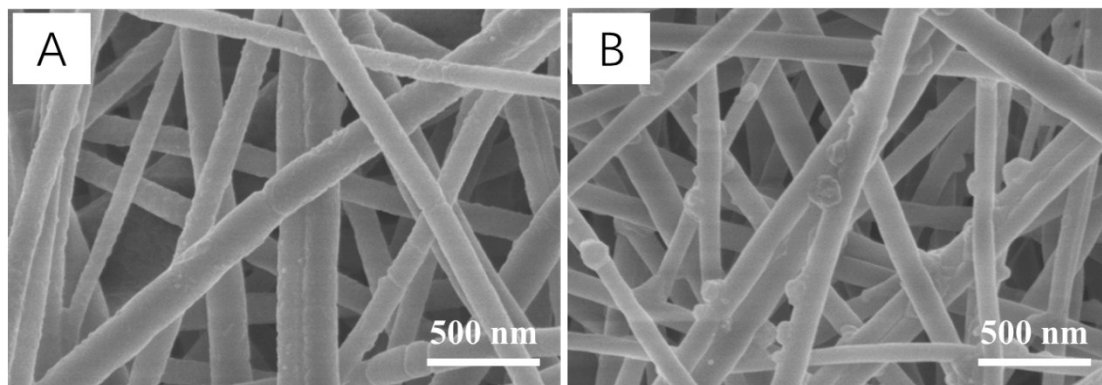
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61 Figure S6. SEM image of the composite of regenerated silk protein and ZIF-8 prepared by directly
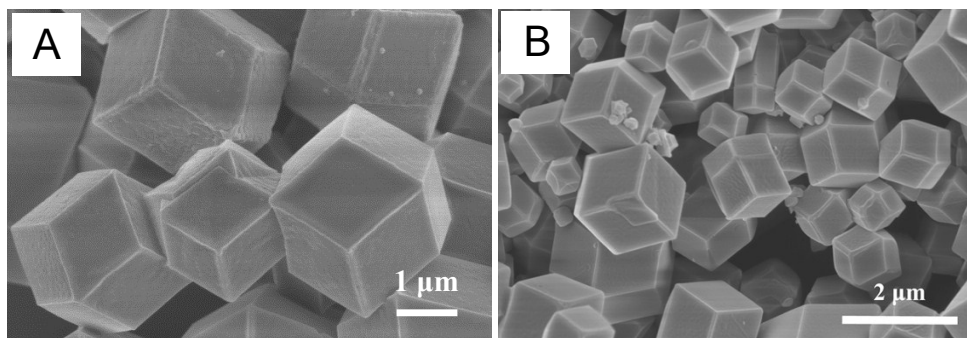
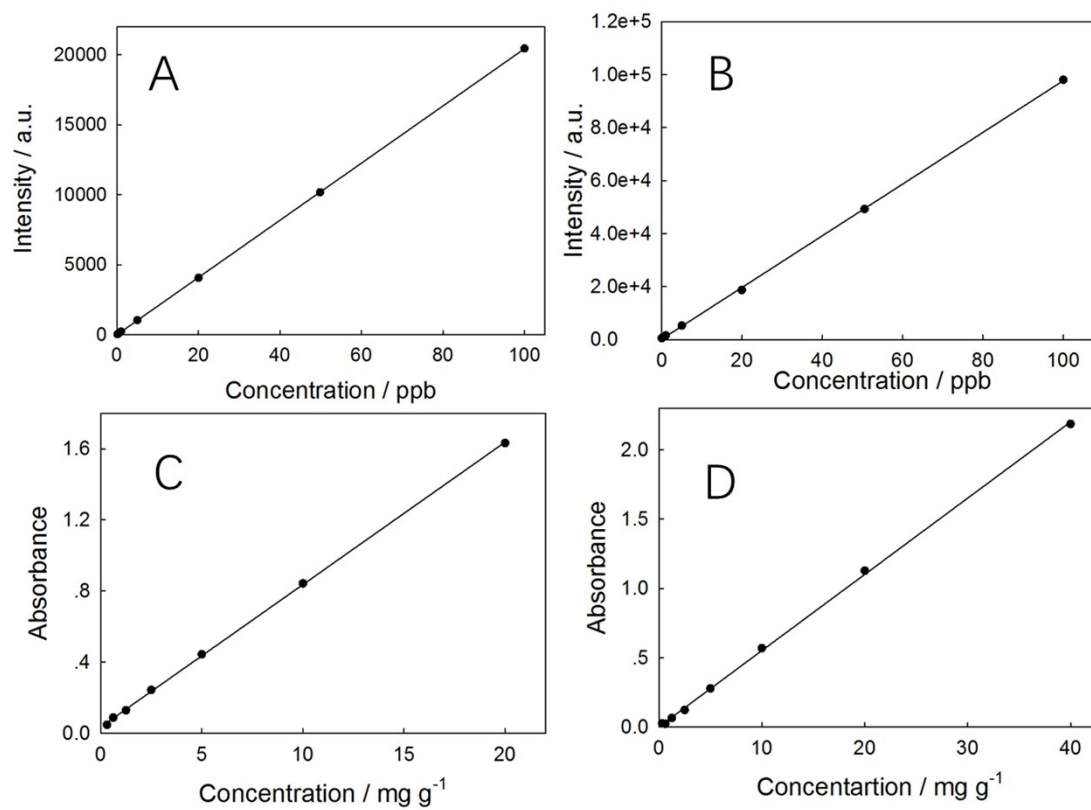62 mixing silk protein and precursors of ZIF-8.

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67 Figure S7. SEM image of PAN/ZIF-8 at 1 min (A) and 5 min (B).

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69 Figure S8. SEM image of micro ZIF-8 (A) and ZIF-67 (B) crystals formed in the solution after 1 h
70 of incubation under the same condition as that for the preparation of ESF@MOFs hybrid
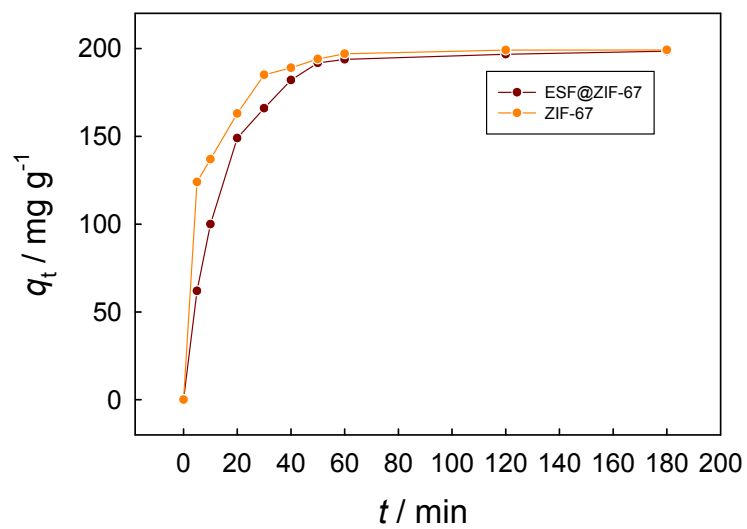71 membranes.
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76 Figure S9. Calibration curves for As(V) (A) and Cr(VI) (B) detection obtained with ICP-OES, as
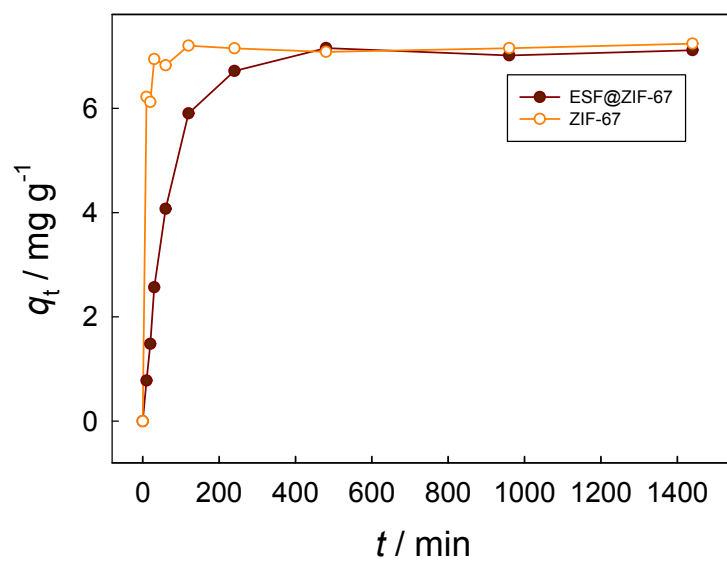77 well as for RB (C) and MG (D) with UV-vis spectroscopy.

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Figure S10. Time dependent adsorption of 200 mg L^{-1} MG solution with ZIF-67
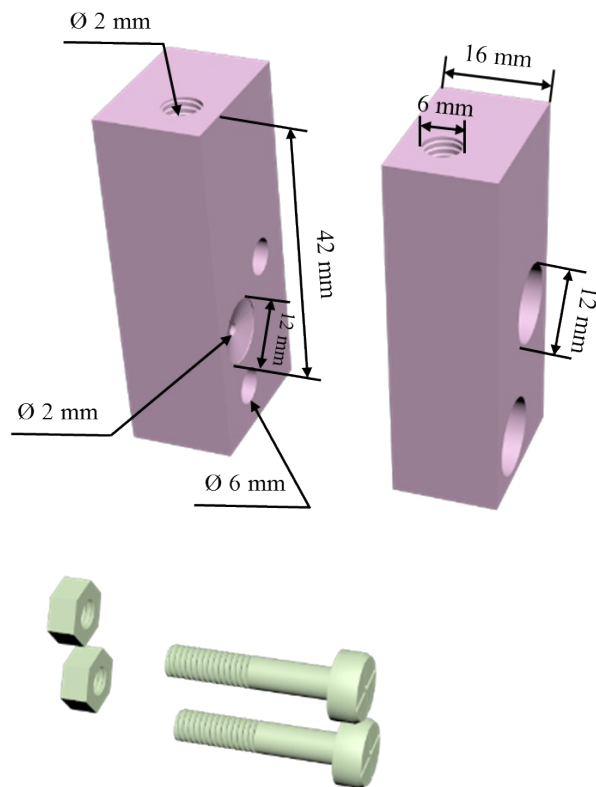crystals and ESF@ZIF-67 membranes.

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86 Figure S11. Time dependent adsorption of Cr(VI) using with ZIF-67 crystals and
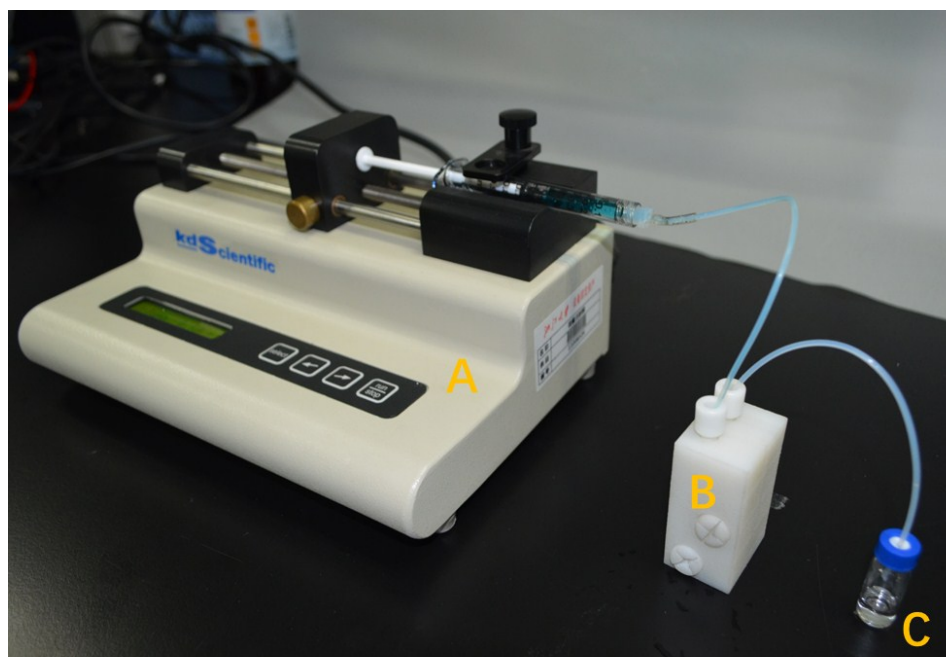87 ESF@ZIF-67.

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92 Figure S12. 3D model of the filter with sandwiched ESF@MOF hybrid membranes for effective
93 water purification.
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97 Figure S13. The ESF@ZIF-67 based filtration system for the purification of MG contaminated
98 water. A: syringe pump, B: 3D-printed filter equipped with ESF@MOF membrane, C: vessel with
99 purified water.
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