Electronic Supplementary Material

The energy-free purification of trace thallium(I)-contaminated potable water using a high-selective filter paper with multi-layered Prussian blue decoration

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Table S1. The trace constituents and content of the actual Pearl River water in Guangzhou Higher Education Mega Center

Items	Value
pH	7.32
Na^+ (mg/L)	1.47
K^+ (mg/L)	1.02
Ca^{2+} (mg/L)	13.73
Mg^{2+} (mg/L)	3.29
NO^{3-} (mg/L)	1.31
Cl^- (mg/L)	6.55
SO_4^{2-} (mg/L)	19.14
F^- (mg/L)	0.26
Mn^{2+} (mg/L)	0.06

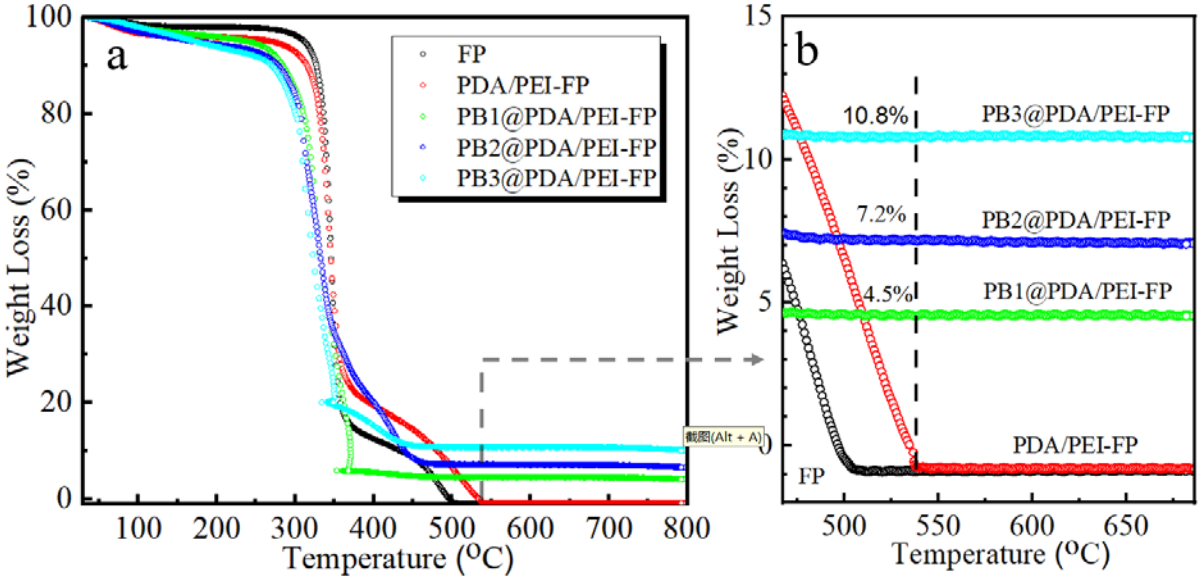

Fig. S1 (a) TGA curves and (b) ultimate weight loss of the FP, PDA/PEI-FP and PB_x@PDA/PEI-FP (x=1, 2, and 3) membranes with the temperature increasing from 50 °C to 700 °C.

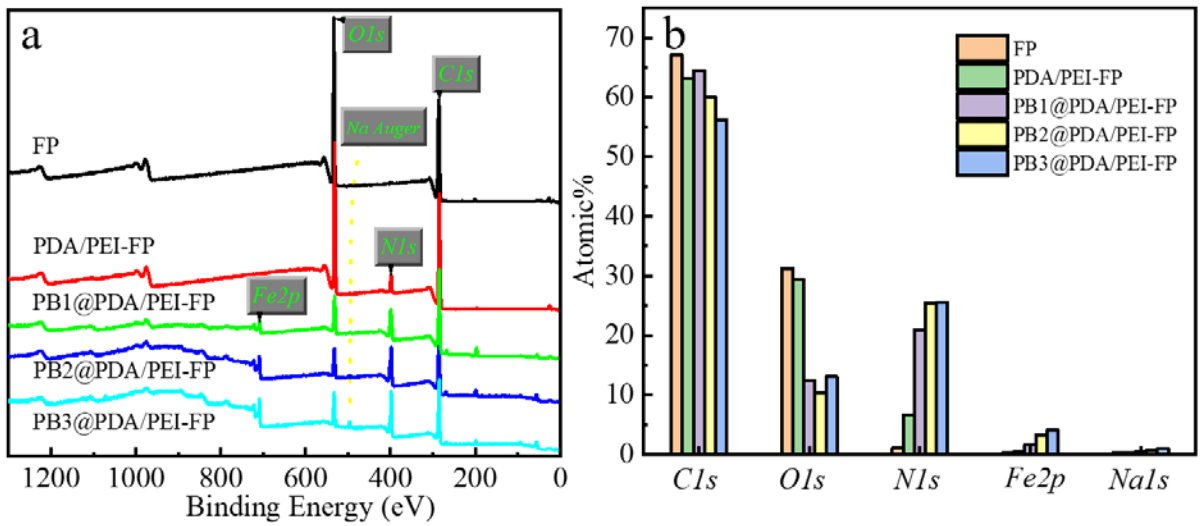

Fig. S2 (a) XPS wide scans of FP, PDA/PEI-FP, PB_1@PDA/PEI-FP, PB_2@PDA/PEI-FP and PB_3@PDA/PEI-FP membrane surfaces. (b) The elemental percentages of FP, PDA/PEI-FP, and PB_x@PDA/PEI-FP (x=1, 2, and 3) membranes.

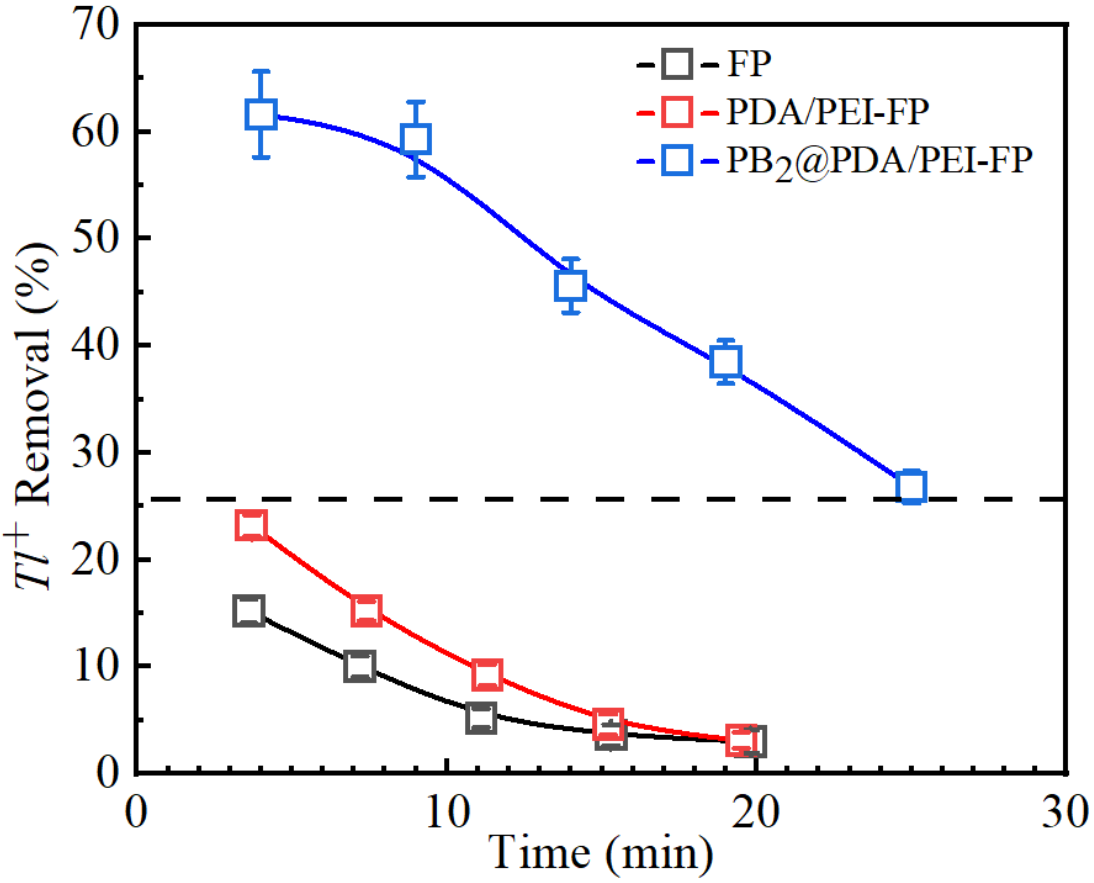

Fig. S3 The Tl^+ removal of FP, PDA/PEI-FP and PB_2@PDA/PEI-FP

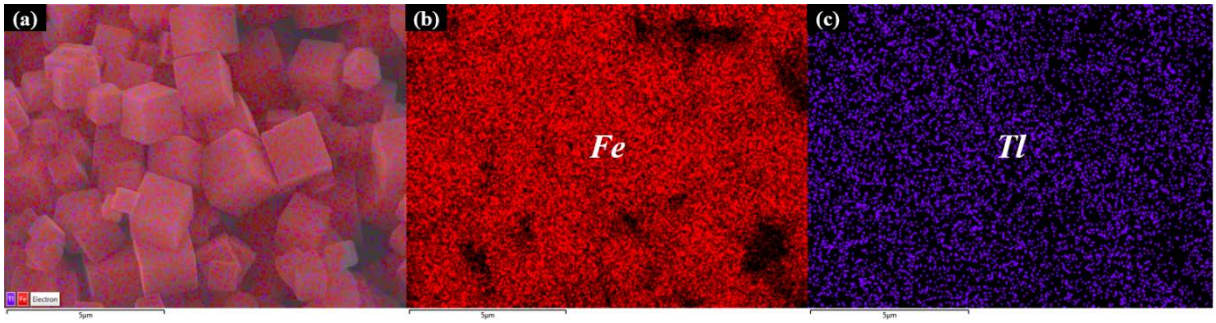

Fig. S4 SEM image and EDS mapping of PB_2@PDA/PEI-FP after Tl adsorption. The membrane sample was obtained from the filtration experiment with 500 mL of Tl^+-containg water (0.5 ppm, pH=7.0) under gravity-driven filtration (GDF).

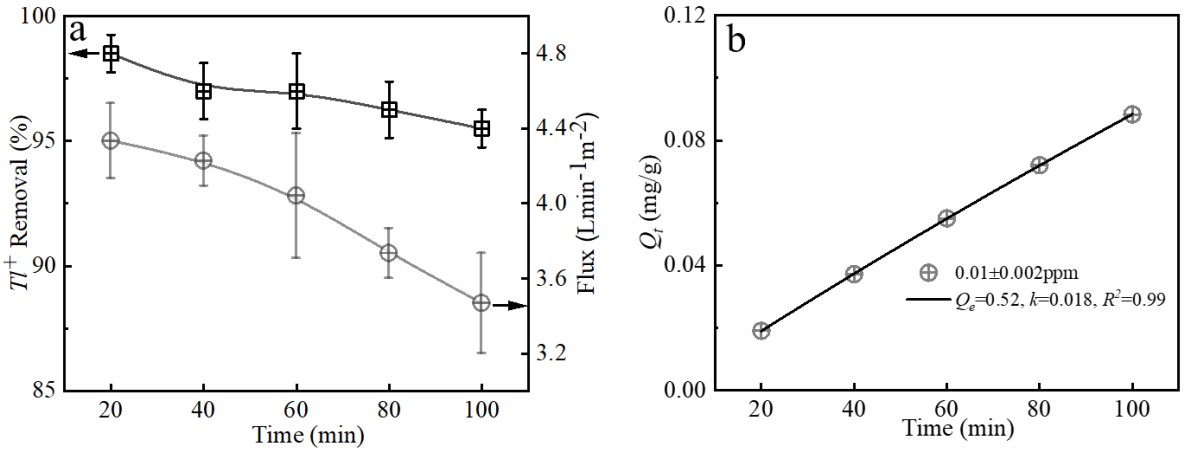

Fig. S5 (a) The Tl^+ removal and fluxes, and (b) the kinetic analysis of PB_2@PDA/PEI-FP in filtrating the Tl^+-containing water with ultra-low concentration (0.01 ppm, pH=7.0, room temperature) under GDF operation.