Supplementary Materials

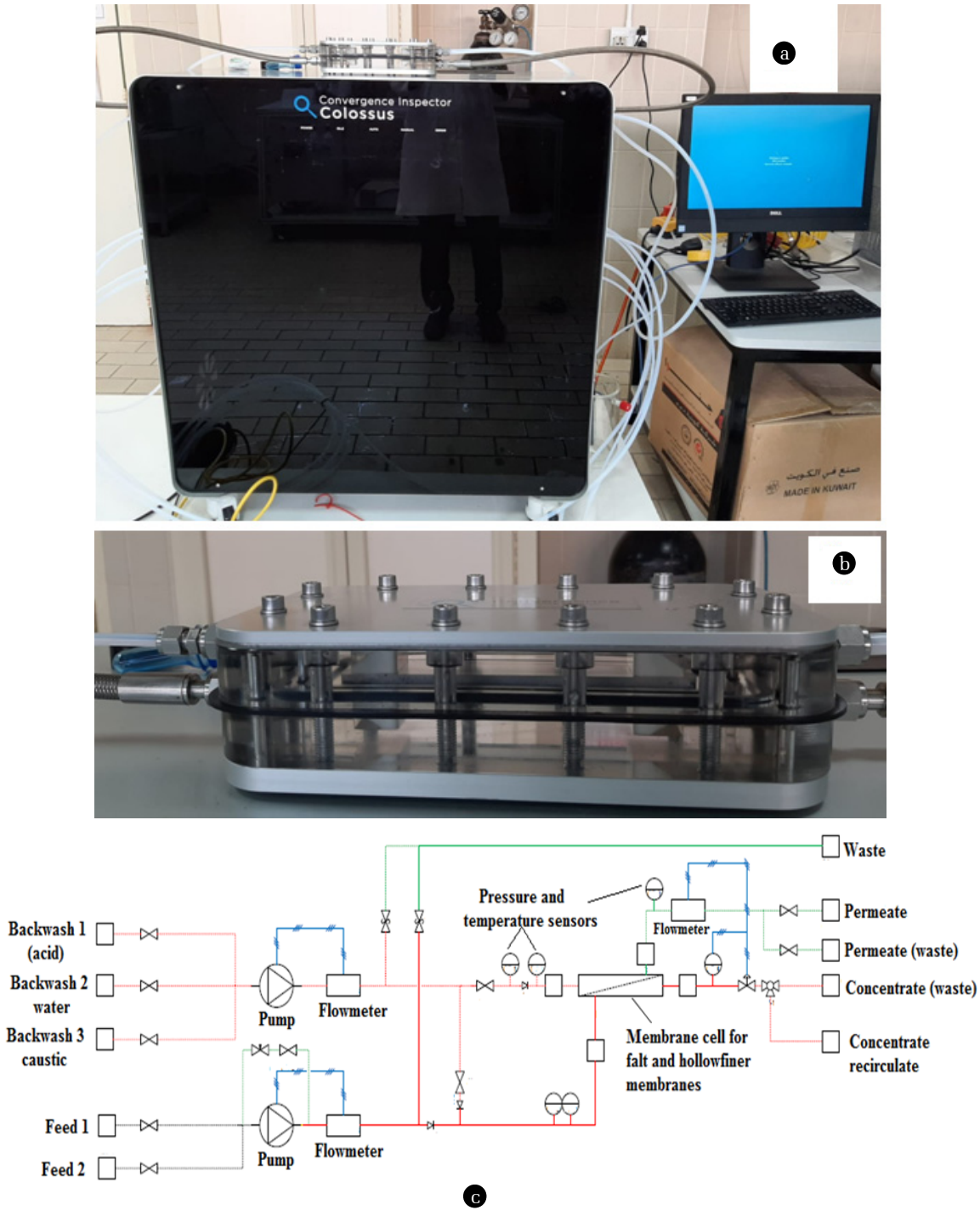

Fig. S1. a) The all-in-one NF test unit and b) the NF membrane module (to locate the flat sheet NF membrane, c) the flow-sheet diagram of the NF test unit.

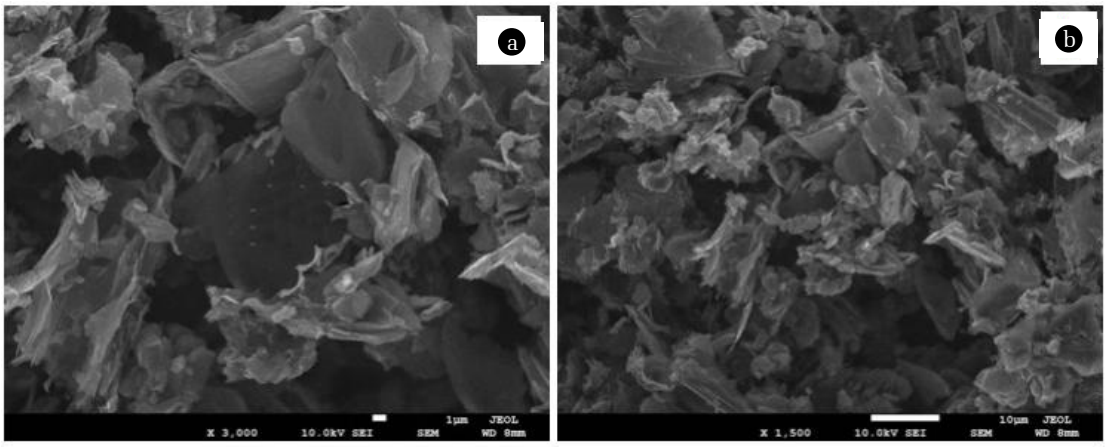

Fig. S2. a and b) The SEM micrographic images of the aminated GO at two different magnifications.

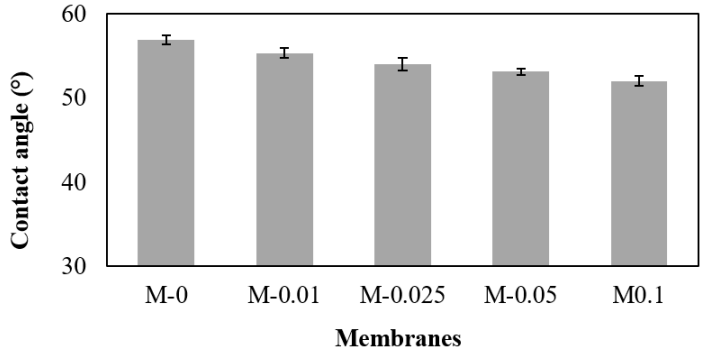

Fig. S3. The surface contact angles of the membranes.

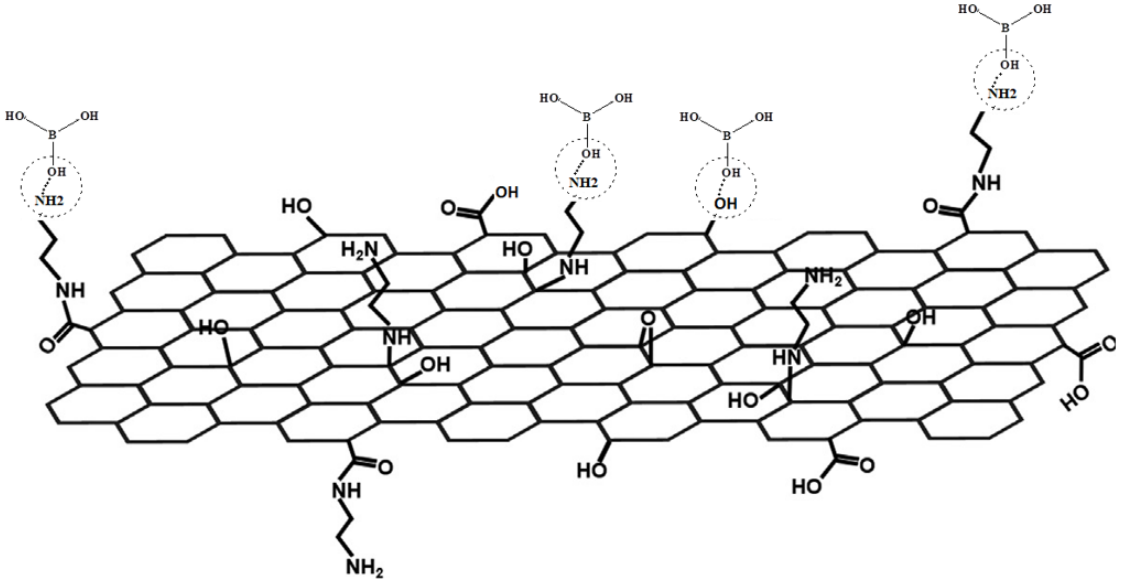

Fig. S4. The repulsive interaction between the -NH_2 and -OH groups present on the membrane surface with the boric acid molecules.

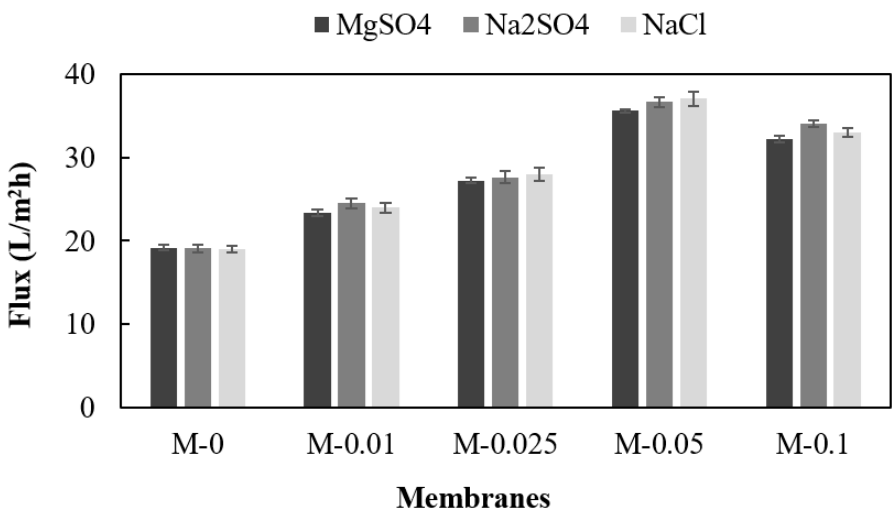

Fig. S5. The flux of the membranes during the rejection experiments using MgSO4, Na2SO4, and NaCl as feed solutions.

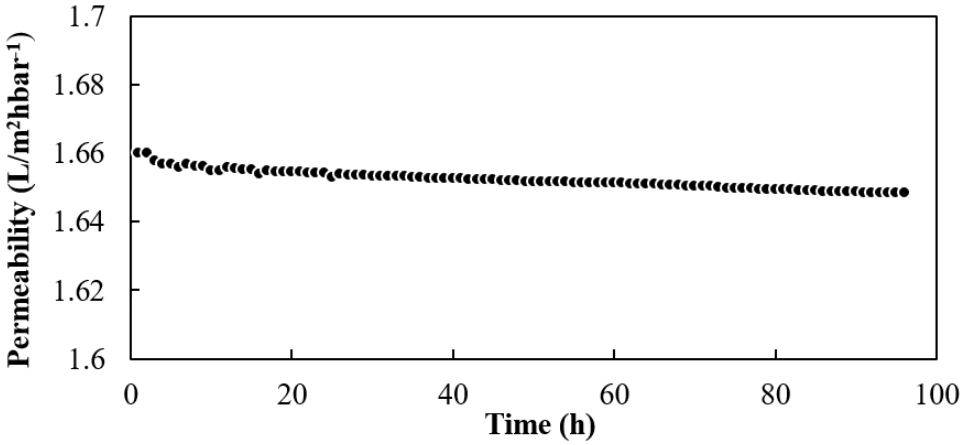

Fig. S6. Permeability of TFN-0.05EDA-GO membrane measured over 96 h.

Table S1. Seawater chemistry of the sample collected from Doha east power station.

Parameters (Unit)	Average Analysis Value	Electrometric method (SMEWW 4500-H^+B)
pH	7.2	Electrometric method (SMEWW 2510)
Conductivity mS/cm	57.5	EDTA titration method (SMEWW 2340C)
Calcium mg/L	540	EDTA titration method (SMEWW 2340C)
Magnesium mg/L	1550	Standard Test methods for Cl^-ion (ASTM 11.01 D4458-94)
Chloride mg/L	26080	Titration method (SMEWW 2320B)
Sodium mg/L	15030	Chromatographic Method
Alkalinity mg/L	167	Gravimetric method (SMEWW 2540 D)
Total dissolved solids mg/L	43690	Sulfaver 4 method (HACH 8051)
Sulphate mg/L	4350	Cadmium reduction method (HACH 8039)
Nitrate mg/L	4.6	SPADNS method (HACH 8029)
Fluoride mg/L	2.2	Salicylate method (HACH 8155)
Ammonia mg/L	<1	HACH 8186
Silica mg/L	1.921	Heteropoly blue method (HACH 8186)
Phosphate mg/L	0.25	Turbidimetric method (HACH 8014)
Barium mg/L	<1	Bicinchoninate method (HACH 8506)
Copper mg/L	<0.05	Total and hexavalent method (HACH 8023)
Chromium mg/L	<0.05	1,10 phenanthroline method (HACH 8008)
Iron mg/L	<0.05	SMEWW 3120B
Boron mg/L	3.80	Nephelometric turbidity method (SMEWW 2130B)
Turbidity NTU	0.905	Electrometric method (SMEWW 4500-O G)
Dissolved Oxygen mg/L	5.8	Respirometric method (SMEWW 5210)
BOD mg/L	<1	Reactor digestion method (HACH 8000)
COD mg/L	99	Gravimetric method (SMEWW 2540 C)
Total suspended solids CFU/ml	28	Membrane filtration method (SMEWW 9215D)

Table S2. The physical characteristics of the EDA-GO.

Purity	~99%
Thickness	5-10 nm
Average lateral dimension (XxY)	~5-10μm
Number of layers	5-10
NH_2 ratio	2-5%
Surface area	60-200m^2/g
Bulk density	0.1g/cm^3
Color	Black powder
Physical form	Fluffy powder
Average pore diameter	4.32 nm
Particle dimension	5-10 μm