

Supplementary Material

# Triboelectric Enhancement of Polyvinylidene Fluoride Mem-brane Using Magnetic Nanoparticle for Water-Based Energy Harvesting

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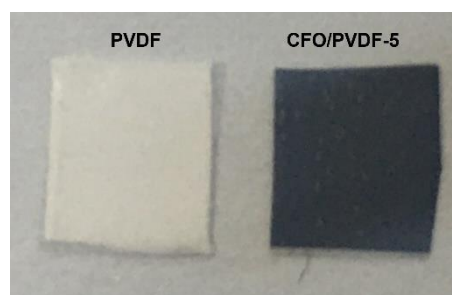


Figure S1. Photography of the PVDF and CFO/PVDF-5 membrane

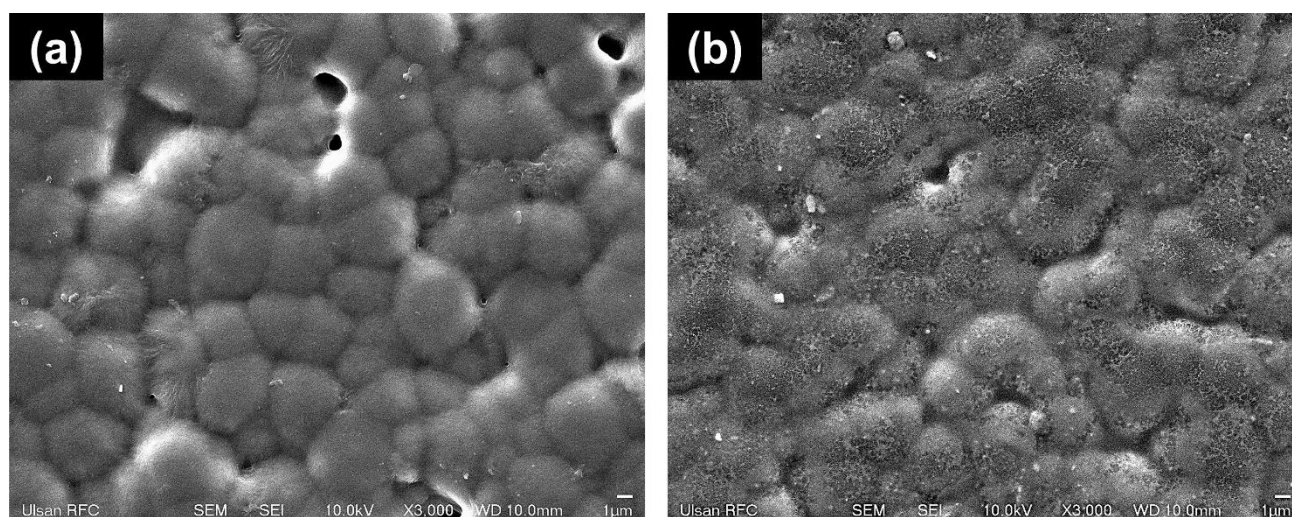


Figure S2. FE-SEM image of (a) PVDF and (b) CFO/PVDF-5 membrane

Sample1_PVDF membrane (a)			Sample2_CFO/PVDF-5 membrane (b)		
RoughnessData:			RoughnessData:		
Parameter	Full Image Values:	Mask Image Values:	Parameter	Full Image Values:	Mask Image Values:
Number Of Points:	262144		Number Of Points:	262144	
Average:	-0.000 m		Average:	-0.000 m	
Standard Deviation (Rq):	162.962 nm		Standard Deviation (Rq):	161.108 nm	
Max:	465.558 nm		Max:	385.066 nm	
Min:	-573.578 nm		Min:	-538.229 nm	
RMS:	162.961 nm		RMS:	161.108 nm	
Average Deviation (Ra):	133.855 nm		Average Deviation (Ra):	127.626 nm	
Skew:	-0.14		Skew:	-0.345	
Kurtosis:	-0.464		Kurtosis:	0.0483	
Percent XY:	100 %		Percent XY:	100 %	
Surface Area:	410.0		Surface Area:	406.9	
Area Percent:	2.492 %		Area Percent:	1.732 %	
Volume	-0.0		Volume	-0.0	

**Figure S3.** The measurement parameter of (a) PVDF and (b) CFO/PVDF-5 membrane in AFM image