

## Electronic Supplementary Information for

### Large scale poly (vinyl alcohol-co-ethylene)/TiO<sub>2</sub> hybrid nanofibrous filters with efficient fine particle filtration and repetitive-use performance

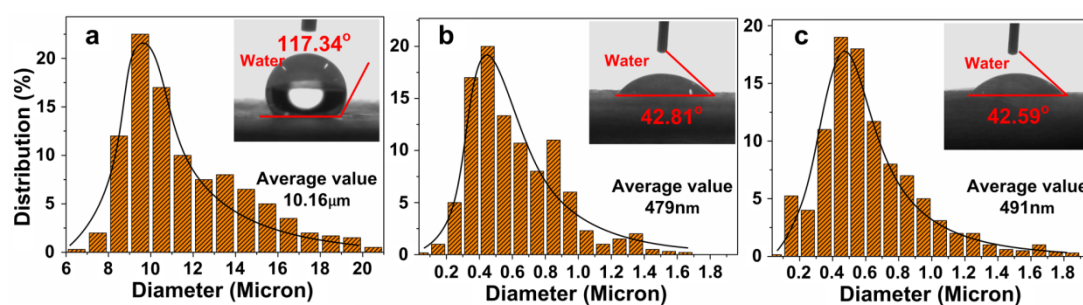
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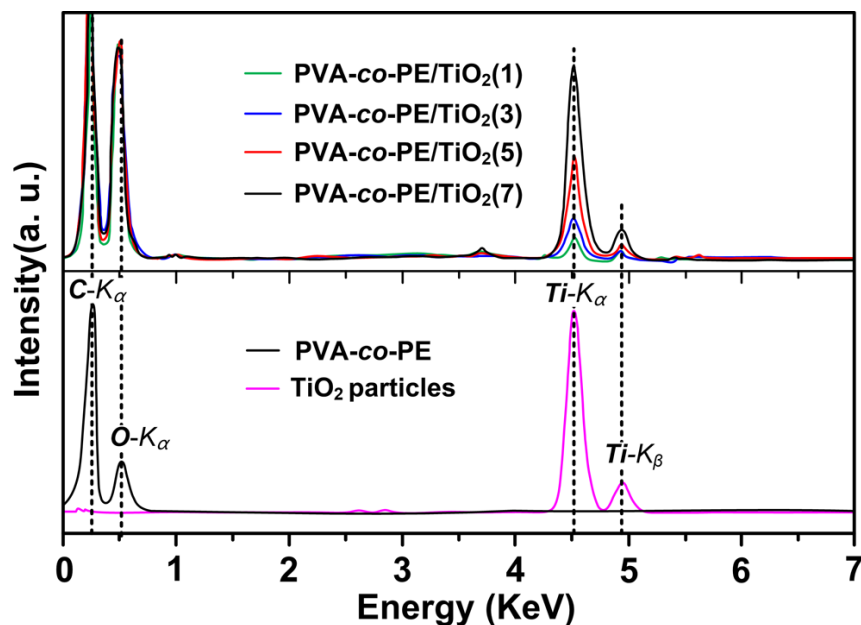
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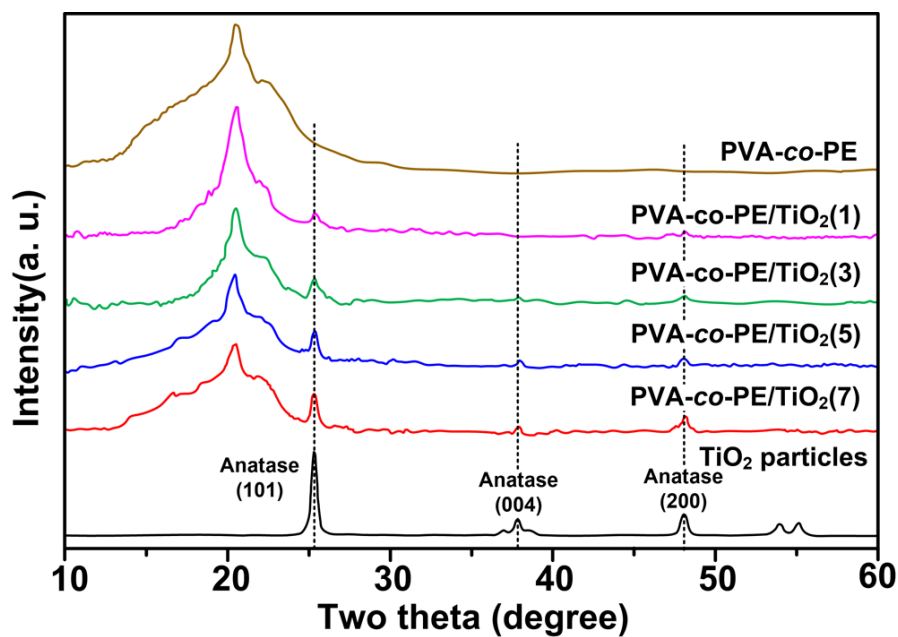
**Fig. S1.** Pore size distribution and contact angle of (a) PP nonwoven scaffold, (b) cross section of PVA-co-PE NFFM and (c) PVA-co-PE/TiO<sub>2</sub>(5) HNFFM with FCD=2.1 g/m<sup>2</sup> (5 means 5 wt.% TiO<sub>2</sub>)



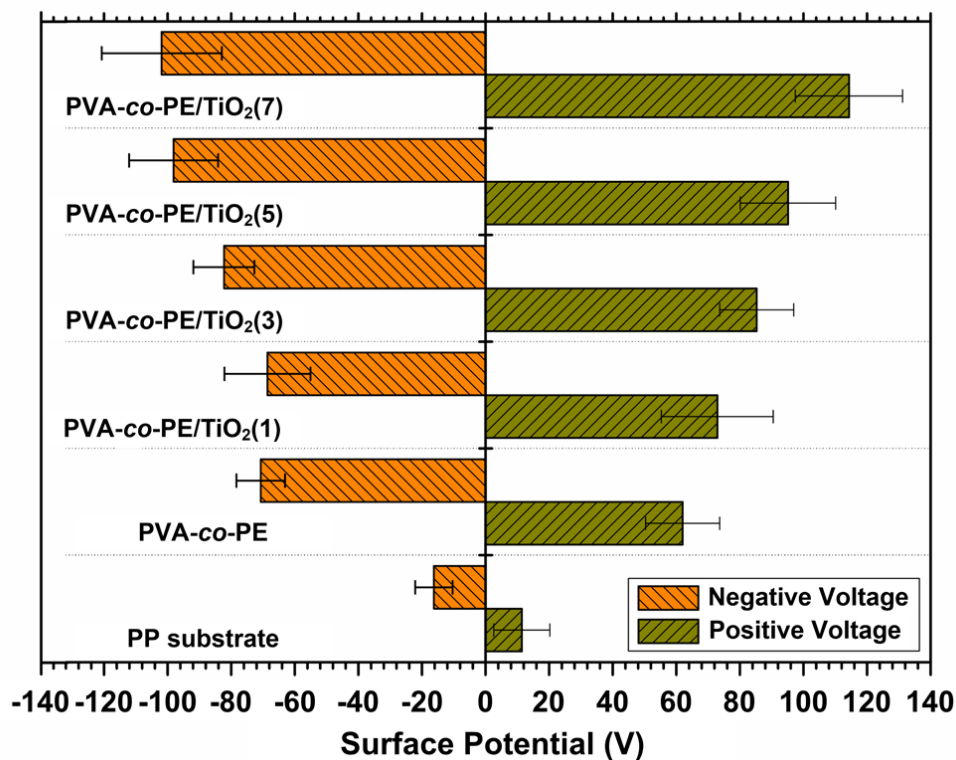
**Fig. S2.** EDS spectra of PVA-*co*-PE NFFM with different TiO<sub>2</sub> content (1 wt.%, 3 wt.%, 5 wt.% and 7 wt.%) compared to TiO<sub>2</sub> NP<sub>s</sub> and pristine PVA-*co*-PE NFFM



**Fig. S3.** XRD patterns of PVA-*co*-PE NFFM with different TiO<sub>2</sub> content (1 wt.%, 3 wt.%, 5 wt.% and 7 wt.%) compared to TiO<sub>2</sub> NPs and pristine PVA-*co*-PE NFFM



**Fig. S4.** Surface potential of PVA-co-PE NFFM with different TiO<sub>2</sub> content (1 wt.%, 3 wt.%, 5 wt.% and 7 wt.%) compared to PP nonwoven substrate



**Fig. S5.** Diagram of loop experiment for comprehensive analysis of filtration performance

