

Supplementary Information

## **Design of Electret Polypropylene Melt Blown Air Filtration Material Containing Nucleating Agent for Effective PM<sub>2.5</sub> Capture**

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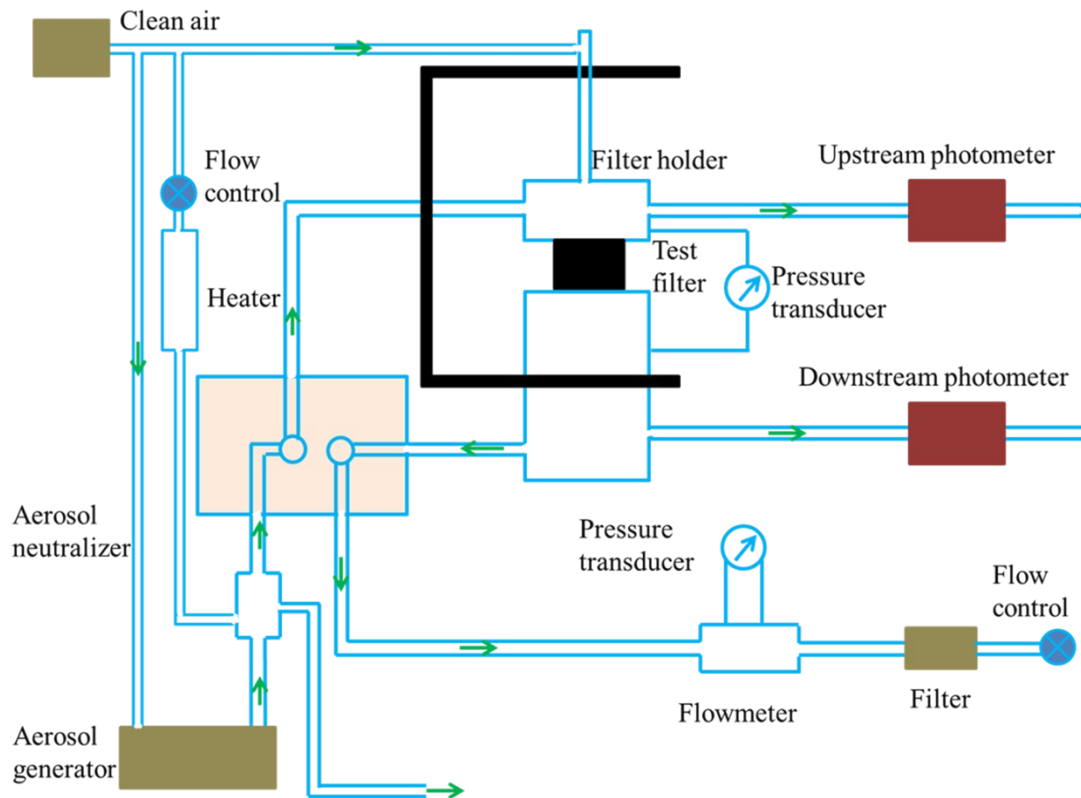


Fig. S1 Experimental setup for testing the filtration performances

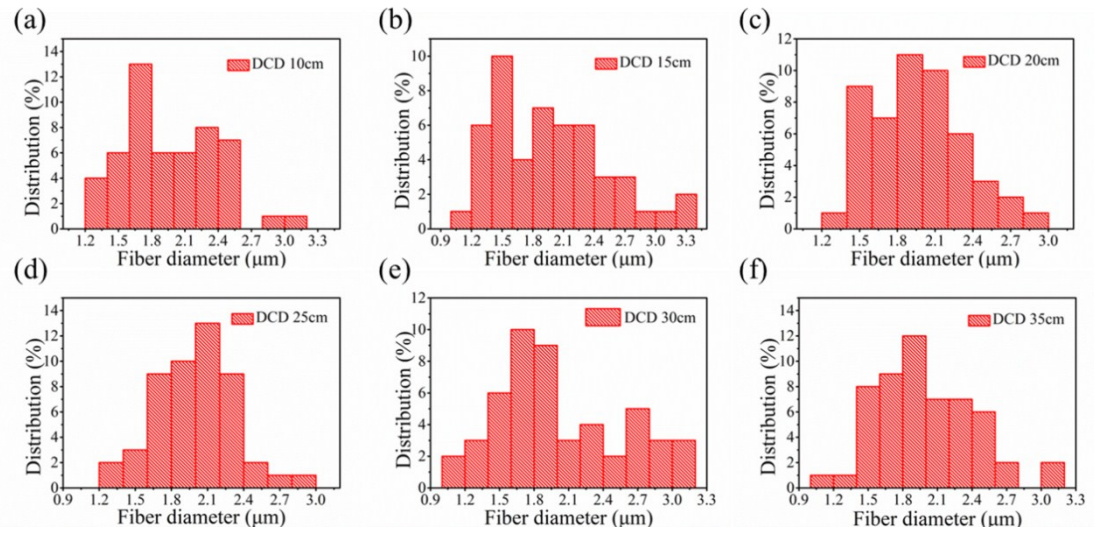


Fig. S2 The fiber diameter distribution of the PP melt blown fabricated at various DCD of (a) 10, (b) 15, (c) 20, (d) 25, (e) 30 and (f) 35 cm

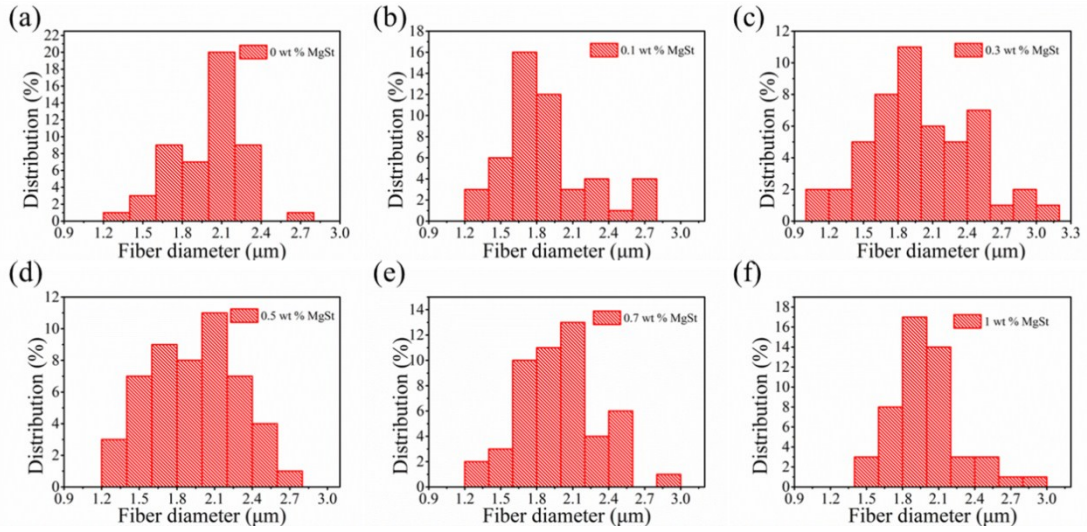


Fig. S3 The fiber diameter distribution of the PP melt blown containing various MgSt particles concentrations of (a) 0, (b) 0.1, (c) 0.3, (d) 0.5, (e) 0.7 and (f) 1 wt %

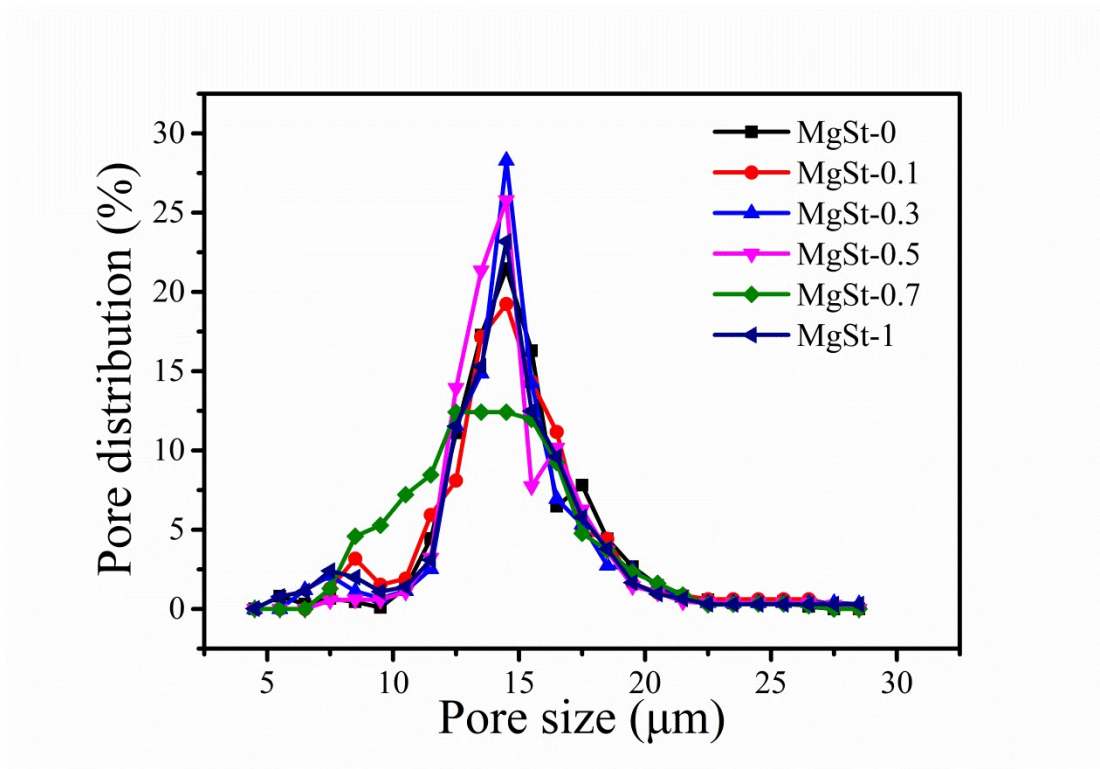


Fig. S4 The pore size distribution of the PP melt blown containing various MgSt particles concentrations of (a) 0, (b) 0.1, (c) 0.3, (d) 0.5, (e) 0.7 and (f) 1 wt %

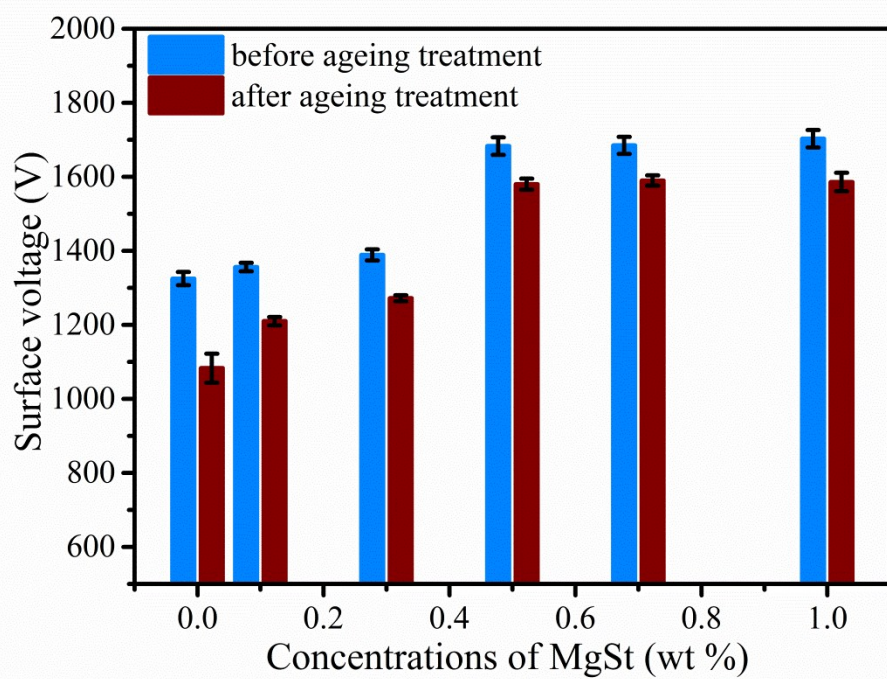


Fig. S5 The stability of the surface voltage

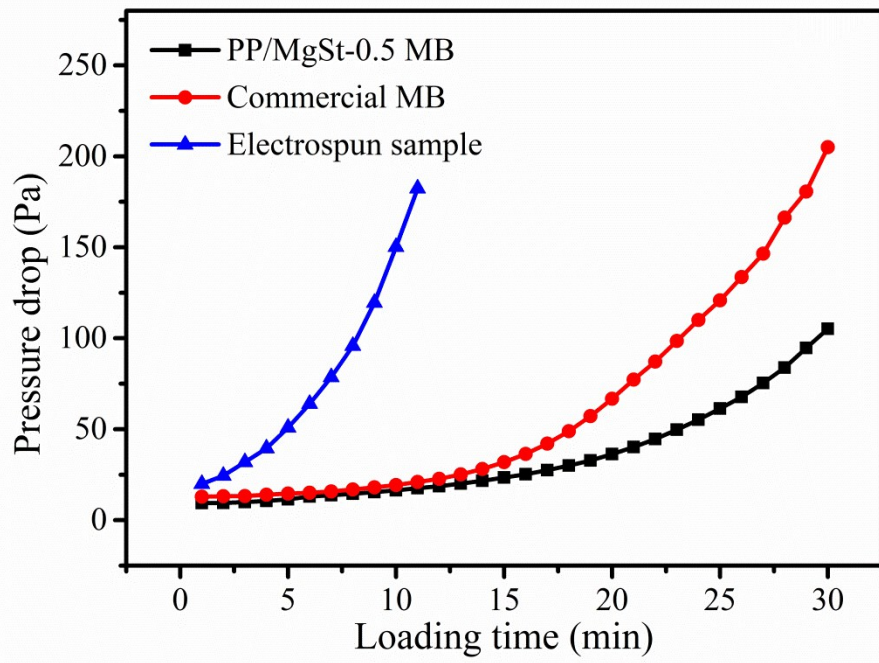


Fig. S6 The pressure drop of the different samples under loading test

Table S1 Crystal parameters of melt blown nonwovens calculated from XRD patterns

Sample	Crystallinity (%)	2 $\theta$ (degrees)	D (Å)	XS (Å)
MgSt-0	27.1	14.1	6.268	100
		17.0	5.213	129
MgSt-0.1	31.6	14.0	6.2	75
		16.9	5.254	120
MgSt-0.3	37.6	14.3	6.155	99
		17.1	5.156	114
MgSt-0.5	44.2	14.1	6.269	81
		17.0	5.212	103
MgSt-0.7	45.6	14.1	6.26	83
		17.1	5.213	119
MgSt-1	46.1	14.1	6.313	85
		17	5.263	122



Table S2 Basic characteristics of the the commercial melt blown nonwovens and electrospun samples

Sample	Material	Thickness (mm)	Basis weight (g/m <sup>2</sup> )	Fiber diameter (μm)	Porosity (%)
Commercial melt blown	Polypropylene	0.41 ± 0.05	40.0 ± 0.2	1.98 ± 0.15	89.3
electrospun	polyacrylonitrile	0.05 ± 0.02	8.2 ± 0.2	0.36 ± 0.05	86.1