

Electrical Supplementary Information for

Silica nanofibrous membranes with robust flexibility and thermal stability for high-efficiency fine particulate filtration

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Table S1 Mechanical properties of SNF membranes fabricated from HNF2 membranes with varied calcination temperatures: 600, 800, and 1000 °C, respectively.

Sample	Calcination temperature (°C)	Thickness of membrane (μm)	Bending rigidity (gf cm)	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
1	600	18.2	0.0015	152	5.4	20.9
2	800	16.1	0.0037	82.7	4.3	11.3
3	1000	15.1	0.0076	31.8	2.9	4.11

Table S2 Characteristics of various precursor solutions.

Sample	Precursor solutions		Viscosity (cps)	Conductivity (μS cm ⁻¹)	Surface tension (mN m ⁻¹)
	PVA (wt %)	TEOS : H ₃ PO ₄ : H ₂ O (molar ratio)			
HNF1	8	1 : 0.01 : 11	60	853	32.4
HNF2	10		130	828	34.9
HNF3	12		215	658	32.5
HNF4	14		400	635	34.3

Table S3 Mechanical properties of SNF1, SNF2, SNF3, and SNF4 membranes.

Sample	Thickness of membrane (μm)	Bending rigidity (gf cm)	Tensile modulus (MPa)	Tensile strength (MPa)	Elongation at break (%)
SNF1	15.9	0.0020	31.8	3.6	8.61
SNF2	18.2	0.0037	82.7	4.3	11.3
SNF3	23.2	0.0156	114	5.5	23.5
SNF4	29.1	0.0169	146	7.2	24.5

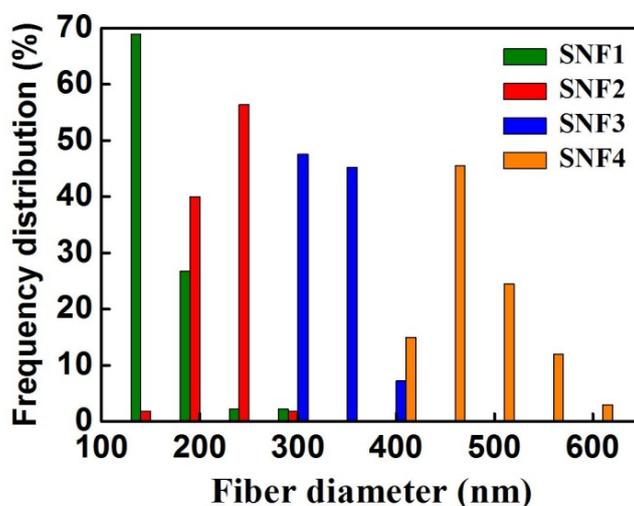


Fig. S1 The diameter distribution of SNF1, SNF2, SNF3, and SNF4 fibers.

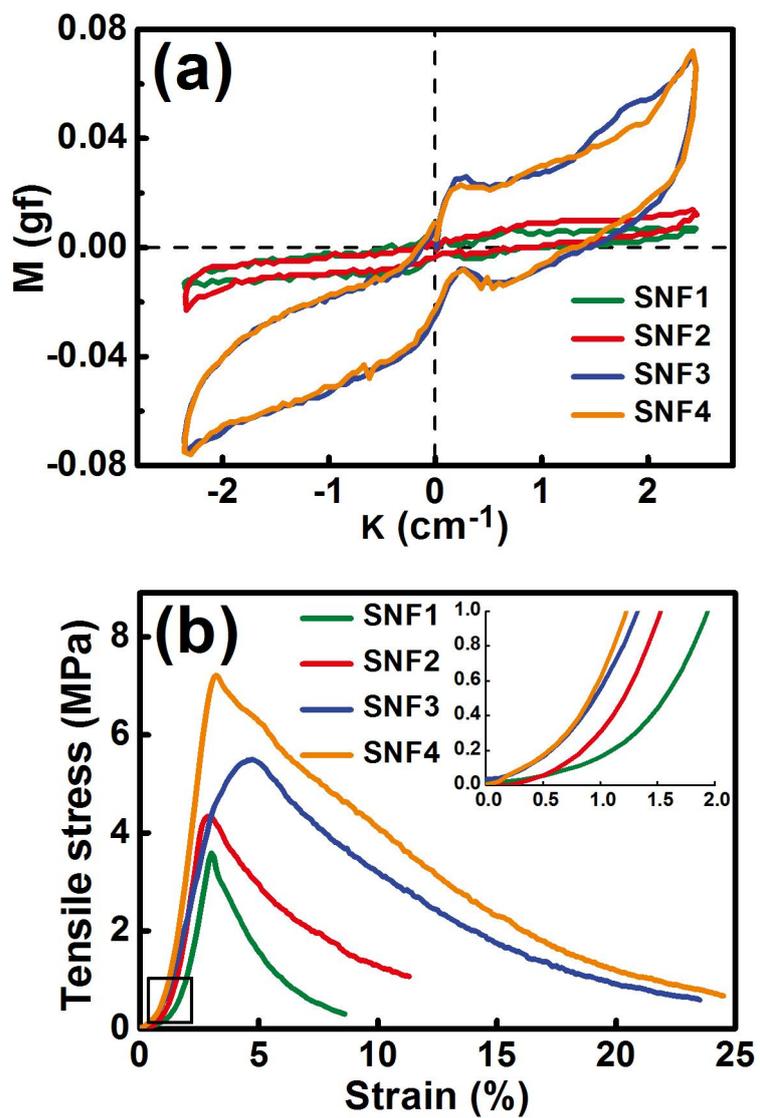


Fig. S2 (a) The KES-FB2 tests and (b) stress-strain curves of SNF1, SNF2, SNF3, and SNF4 filtration membranes. Inset: the stress-strain curves over the low strain range (strain < 2%) of SNF membranes.