Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

A synergistic self-assembly strategy to fabricate thermal stable OPAN/PI composite aerogel for particle matter remove

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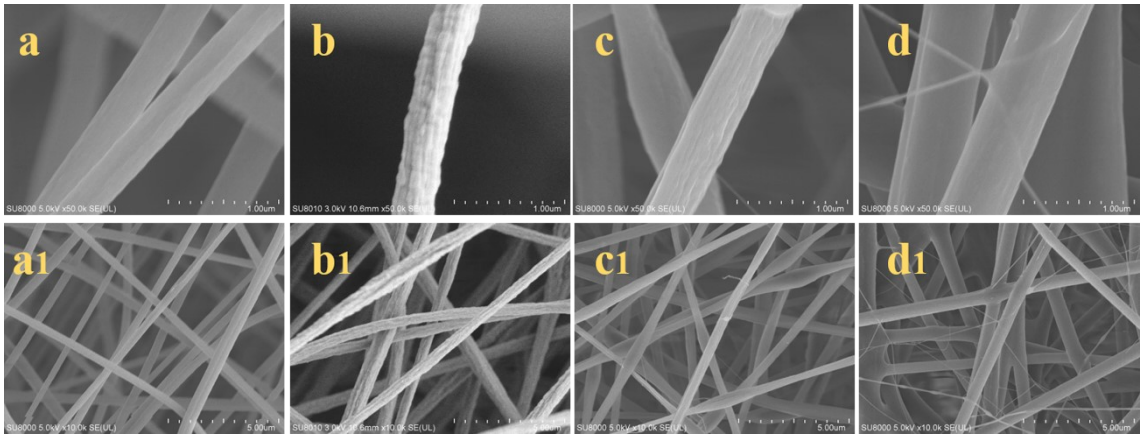

Fig. S1. SEM images of nanofiber membranes with different samples. (a-a1) PAN, (b-b1) PAN/PAA-20, (c-c1) PAN/PAA-40, (d-d1) PAN/PAA-60.

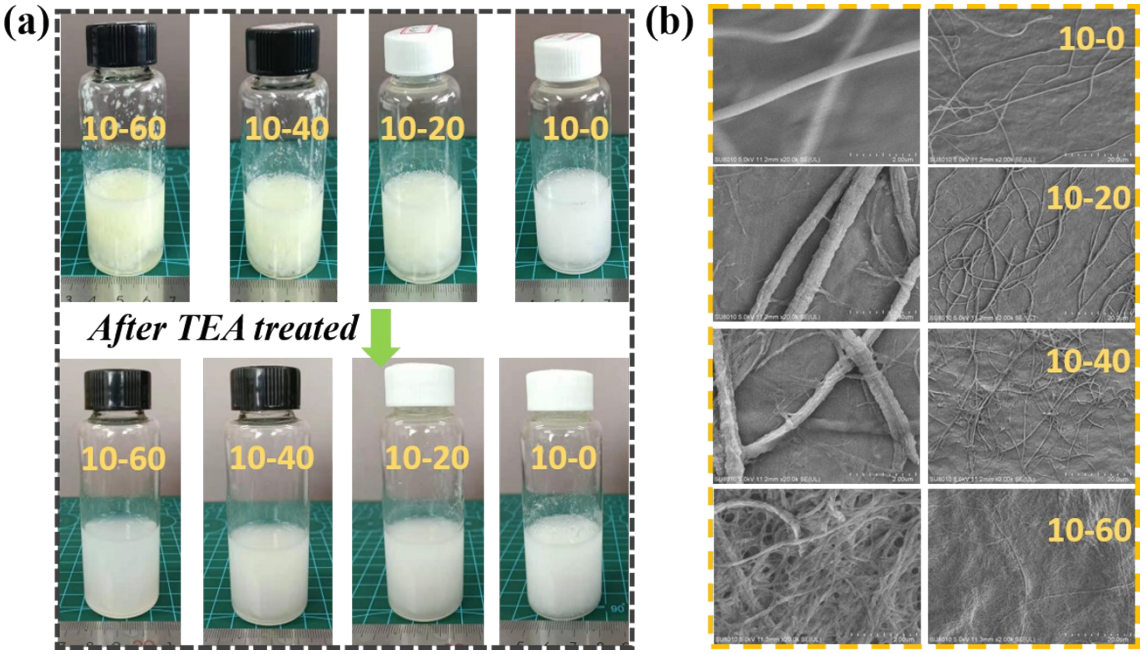

Fig. S2. (a) The digital image changes of different dispersions after TEA processing and (b) corresponding SEM images.

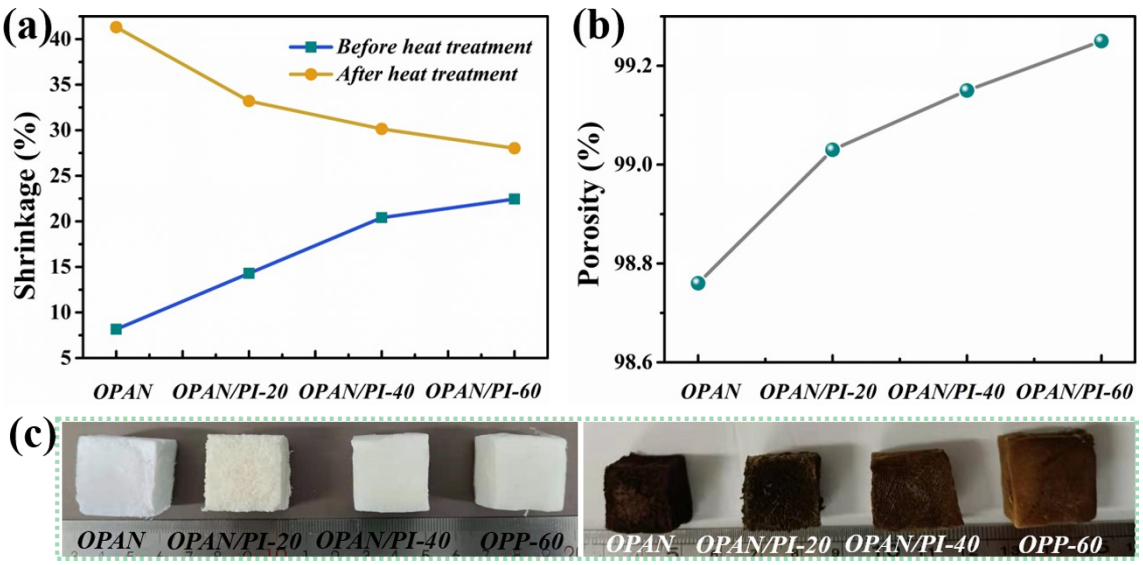

Fig. S3. The shrinkage (a) and porosity (b) of different aerogel sample and (c) images of appearance changes of different aerogel samples before and after heat treatment.

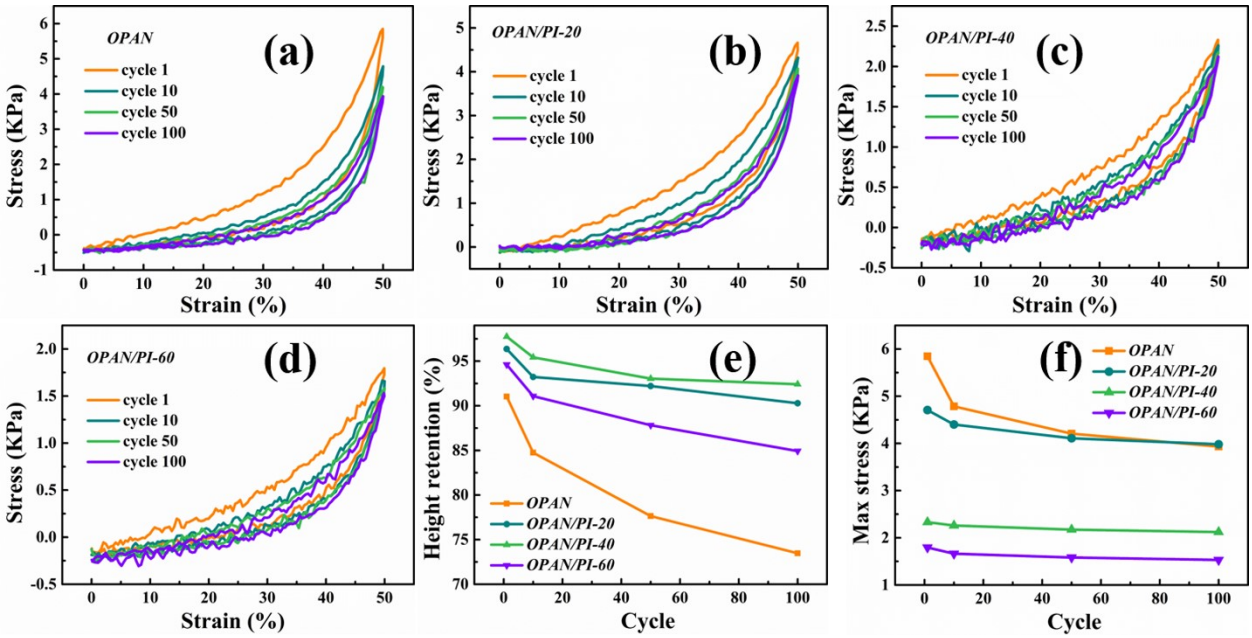

Fig. S4. The cyclic compressive stress-strain curves of different aerogel sample (a: OPAN, b: OPAN/PI-20, c: OPAN/PI-40, d: OPAN/PI-60) at 50% strain. Height retention (e) and max stress (f) of aerogel samples.

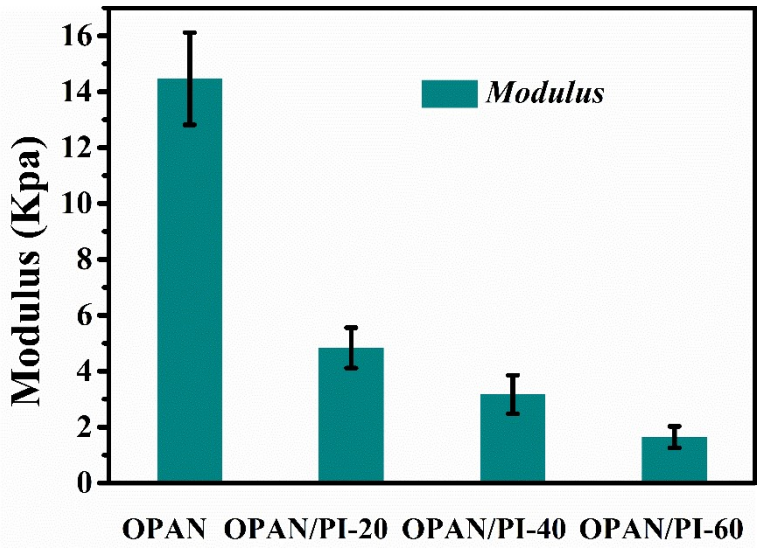

Fig. S5. The tensile stress-strain curves of different aerogel sample.

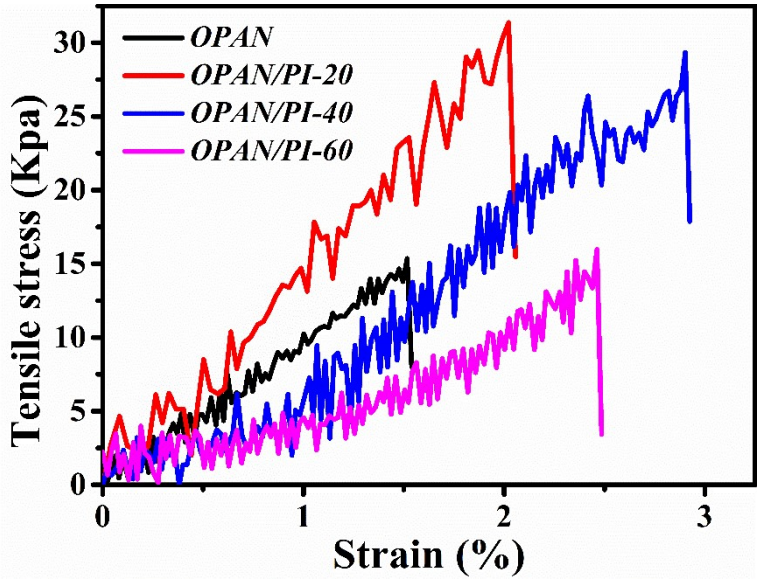

Fig. S6. The tensile stress-strain curves of different aerogel sample.

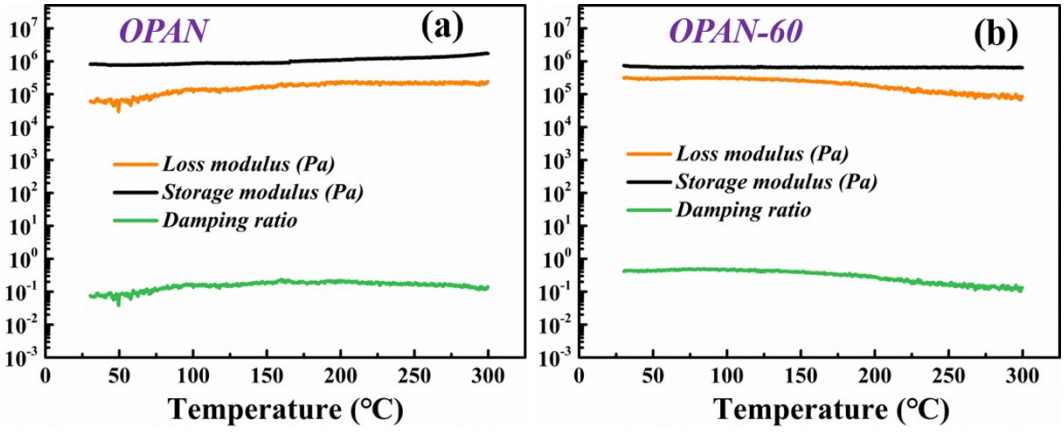

Fig. S7. The variations in the storage modulus, loss modulus, and damping ratio of the aerogel sample (25–300 °C).

Table. S1 Comparison of LOI value and thermal conductivity of different aerogel samples.

Sample	Density (mg/cm^3)	LOI (%)	Thermal conductive (mW/(mK))	Ref.
PI/PVDF	22.0		31.0	17
PI/RGO/Co	38.0	33.0	40.0	36
PI/ANF	5.2	34.2	28.6	37
PINF	10.1		26.0	38
NFC-Si-T	55.0	42.6	37.0	39
AgNWs/Fe_3O_4/MF	21.6	40.8	34.0	40
OPAN/PI	**15.2**	**36.6**	**26.8**	**This work**