Electronic Supplementary Information

Super strong, shear resistant, and highly elastic lamellar structured ceramic nanofibrous aerogels for thermal insulation

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Supplementary Materials

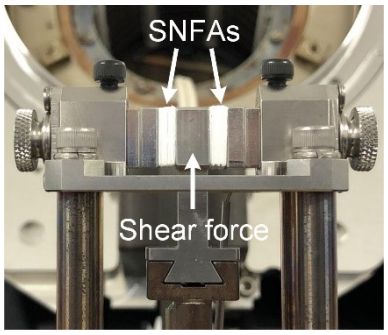

Fig. S1 The measurement of shear mechanical properties was performed by using a TA-Q850 DMA instrument with a shear sandwich clamp.

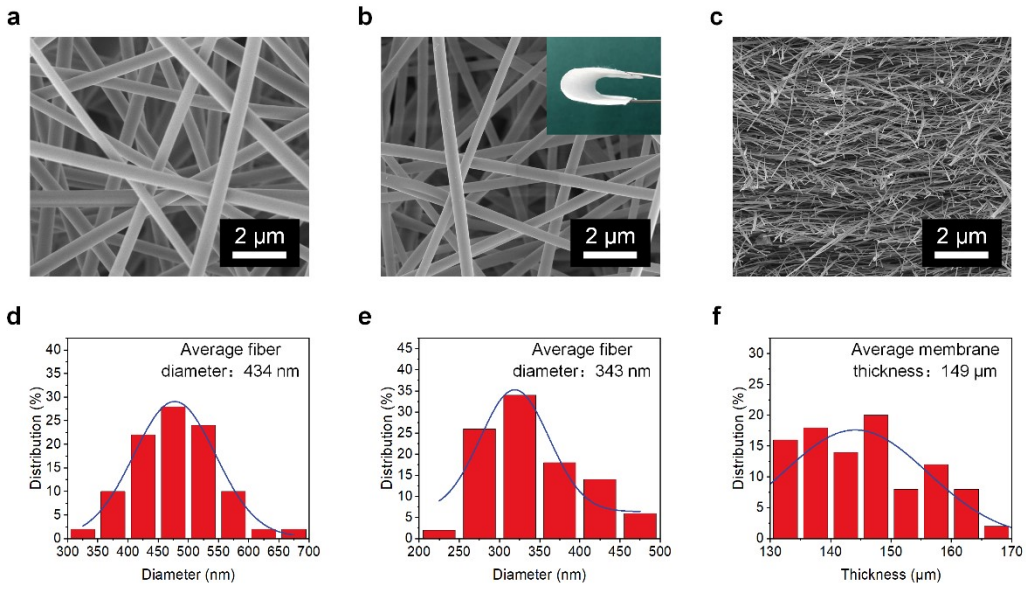

Fig. S2 Fabrication of electrospun SiO_2 nanofibrous membrane. SEM images of (a) PVA/SiO_2 hybrid nanofibers, (b) SiO_2 nanofibers, and the cross section of (c) SiO_2 nanofibrous membrane. Inset in b: optical image of SiO_2 nanofibrous membrane showing outstanding softness. Diameter distribution histogram of (d) PVA/SiO_2 hybrid nanofibers, and (e) SiO_2 nanofibers. Thickness distribution histogram of (f) SiO_2 nanofibrous membrane.

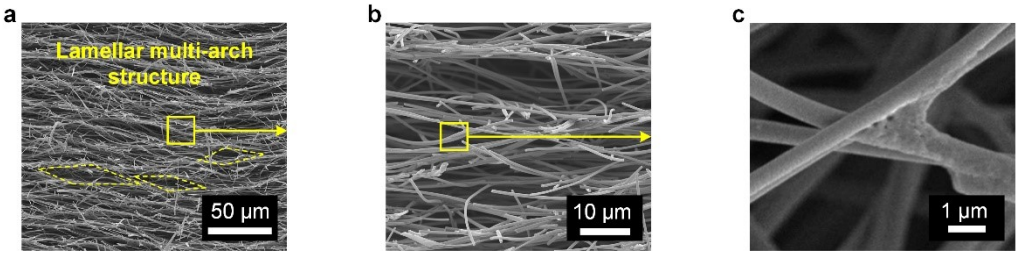

Fig. S3 (a-c) Microscopic morphologies of SNFAs at different magnifications showing the nanofibrous lamellar multi-arch structure.

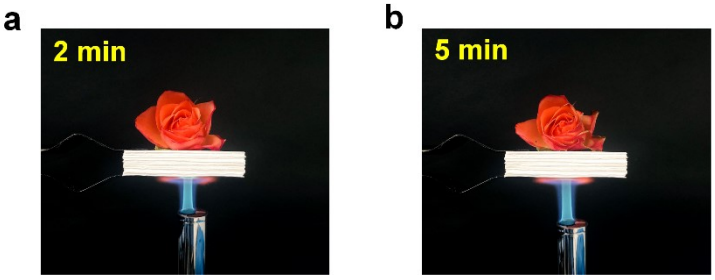

Fig. S4 Fresh flower was protected by a piece of aerogel with a thickness of 10 mm from withering or carbonization in the flame of butane blowlamp after (a) 2 min and (b) 5 min.

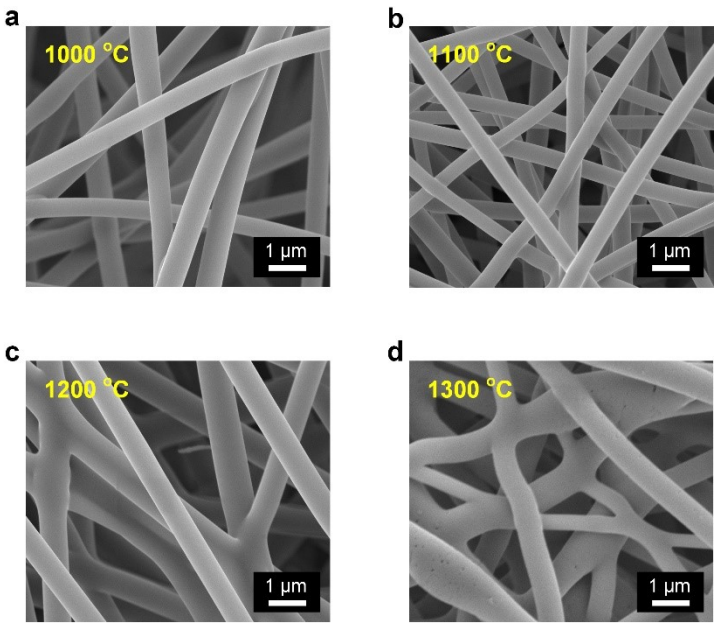

Fig. S5 (a-d) SEM images of SNFAs after treatment at 1000, 1100, 1200 and 1300 °C for 60 min.

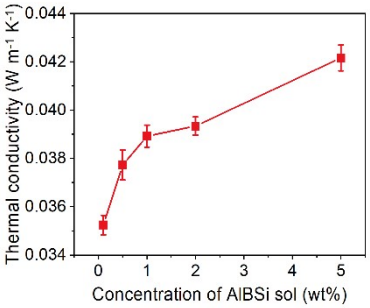

Fig. S6 Thermal conductivities of the SNFA-0.1, SNFA-0.5, SNFA-1, SNFA-2, and SNFA-5 at room temperature, repectively.