Supporting Information

Additive manufacturing of eco-friendly building insulation materials by recycling pulp and paper

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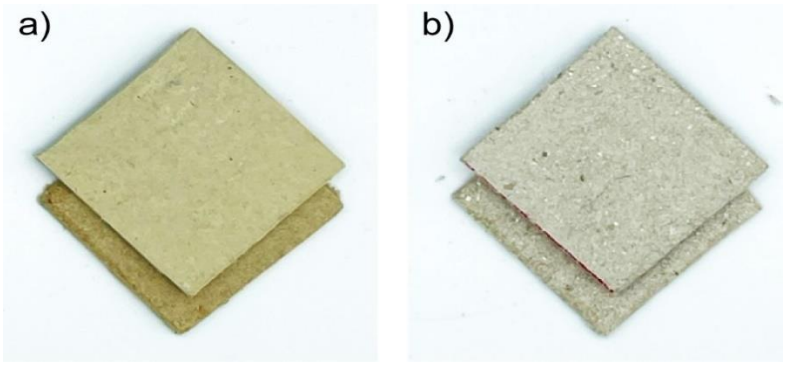

Fig. S1 Optical images of the fiber-aerogel composite prepared from (a) in-situ and (b) physical mixing method.

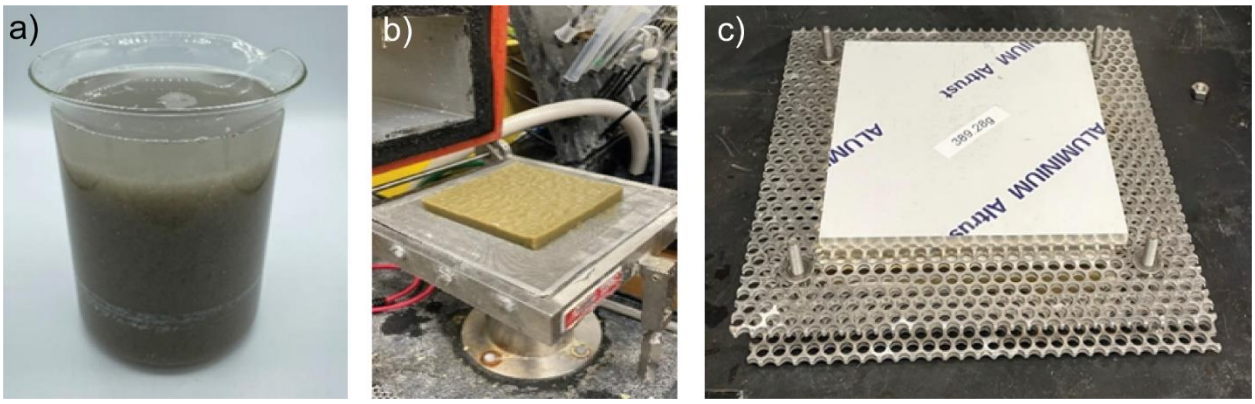

Fig. S2 (a) Fiber-aerogel slurry, (b) paper-making method and (c) ambient pressure drying with fixtures.

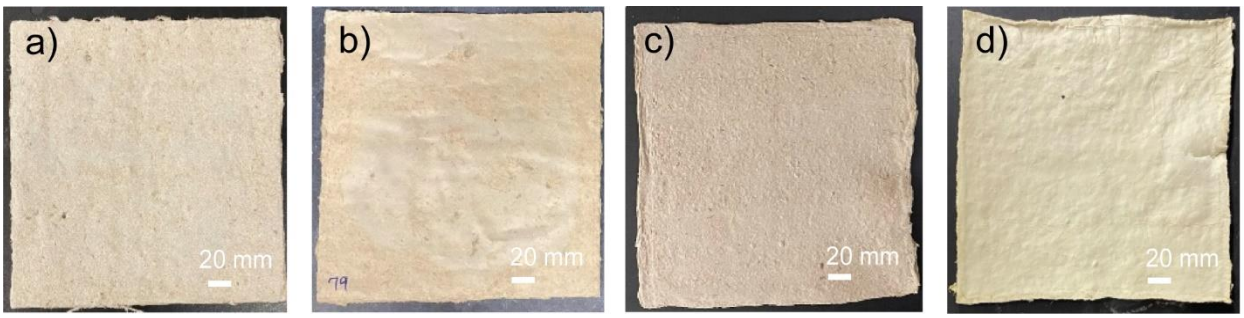

Fig. S3 Optical Images of composites prepared from in situ method with aerogel wt% (a) 10 % (b) 15% (c) 20 % (d) 30 %.

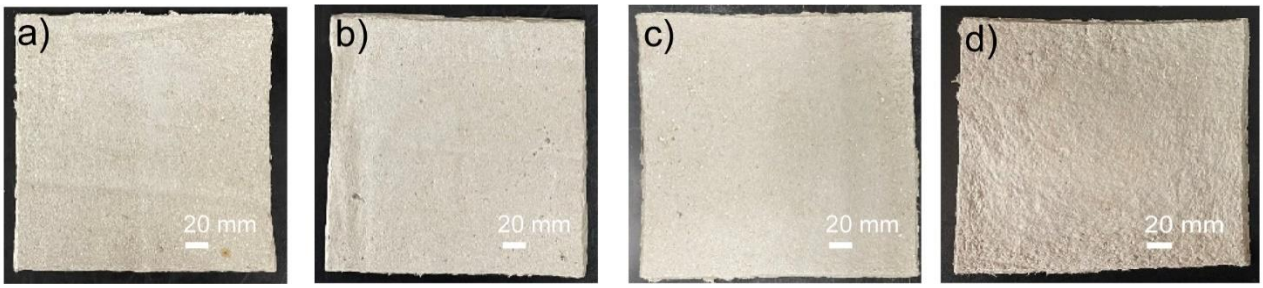

Fig. S4 Optical Images of composites prepared from physical mixing method with aerogel wt% (a) 10 % (b) 15 % (c) 20 % (d) 30 %.

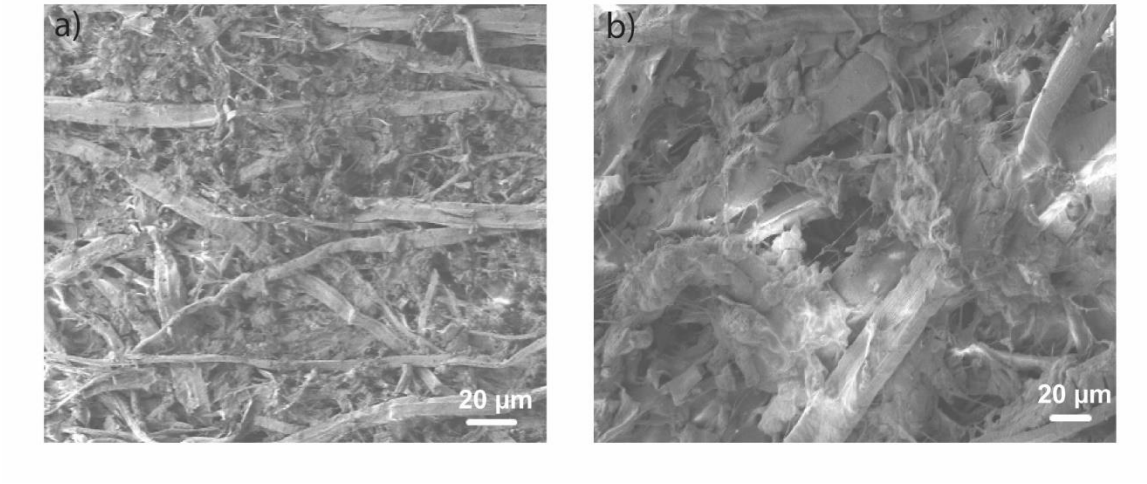

Fig. S5 SEM images of cellulose-aerogel composites with aerogel wt% (a) 10% and (b) 50 % prepared by using in situ method.

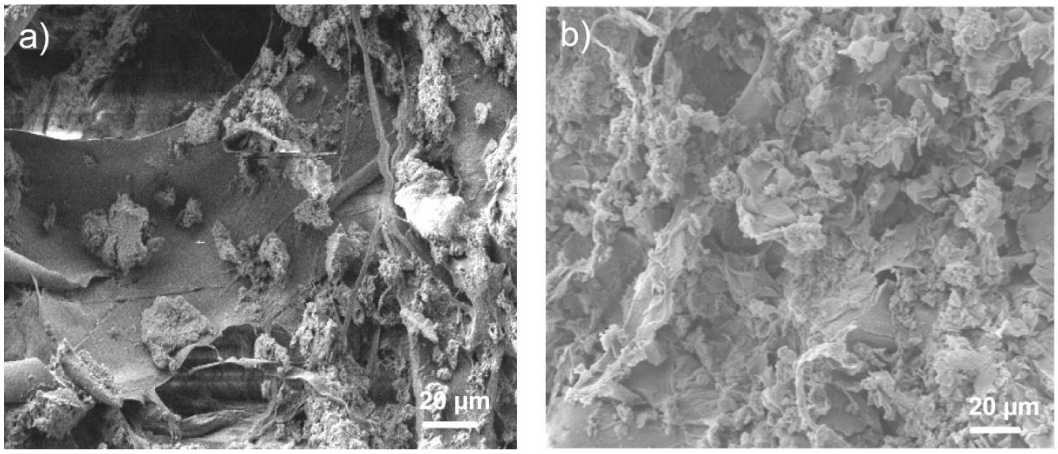

Fig. S6 SEM images of cellulose-aerogel composites with aerogel wt% (a) 10% and (b) 50 % prepared by using the physical mixing method.

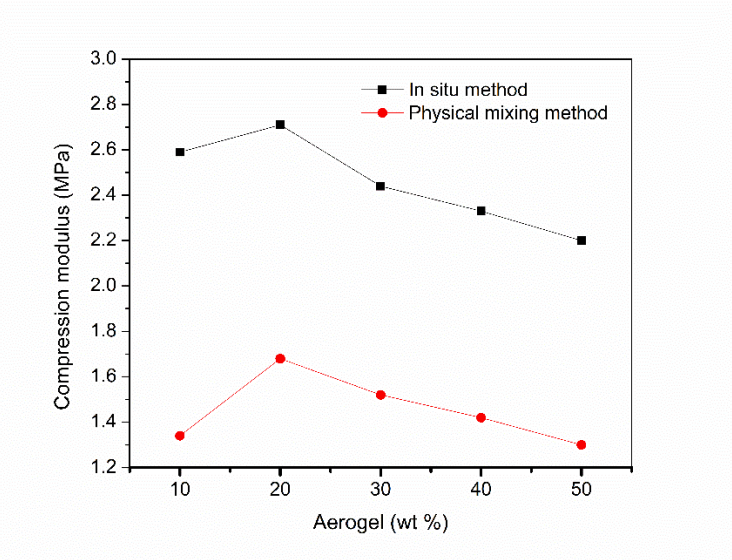

Fig. S7 Compression modulus vs aerogel (wt %) plot of composites prepared in situ and physical mixing methods.

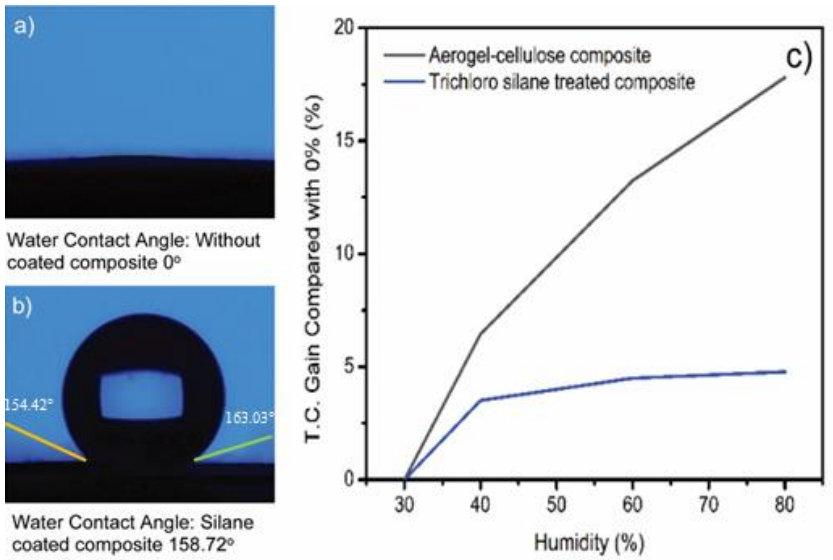

Fig. S8 The water contact angle for (a) without and (b) with hydrophobic tri-cholo silane coated cellulose reinforced aerogel composite, (c) Humidity-dependent thermal insulation characteristics of nanocomposites.

Table S1. Comparison of thermal conductivity of synthesized materials with other reported materials.

Materials	Thermal Conductivity (mW/m.k)	References
Silica/cellulose hybrid aerogels	0.040	1
CNF/AlOOH aerogel	0.039	2
Nanofibrillated cellulose/graphene films	0.042	3
Ag_2O/Nanofibrillated cellulose aerogels	0.072	4
Cellulose/aerogel composite from recycled cellulose	0.034	This work

References:

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