

Supporting Information

Development of a novel cellulose-foam augmented with candle-soot derived carbon nanoparticles for solar-powered desalination of brackish water

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Table S1. Variation of solar radiation, ambient temperature, water temperature and water productivity in July 2021

Date	Avg. Solar radiation (W/m²)	Avg. ambient temperature (°C)	Conventional TSS		TSS with CF		TSS with CF-CSCNP	
			Avg. water (°C)	Avg. Full day water yield (L/m².day)	Avg. water (°C)	Avg. Full day water yield (L/m².day)	Avg. water (°C)	Avg. Full day water yield (L/m².day)
01.07.2021	598	33.88	45.44	2.32	47.07	3.15	49	6.27
02.07.2021	578	33.82	46.43	2.39	47.48	3.31	49.45	6.4
04.07.2021	560	33.0	45.1	2.17	46.7	3.01	48.3	5.8
07.07.2021	572	33.3	45.31	2.27	46.98	3.1	48.75	6.1
08.07.2021	541	32.4	44.5	2	46.1	2.77	47.90	5.39
13.07.2021	554	32.6	44.7	2.09	46.5	2.92	48	5.61
20.07.2021	550	32.54	44.67	2.07	46.42	2.84	47.93	5.5
24.07.2021	534	32.31	44.3	1.98	46	2.7	47.76	5.3
26.07.2021	564	33.1	45.20	2.23	46.82	3.05	48.54	6.01
30.07.2021	549	32.51	44.62	2.02	46.3	2.77	47.97	5.41

Table S 2. Variation of droplet size with respect to solar radiation in all three TSS

Type of TSS	Solar radiation	Solar radiation	Solar radiation	Solar radiation
	(430 W/m²)	(570 W/m²)	(810 W/m²)	(830 W/m²)
	Droplet size	Droplet size	Droplet size	Droplet size
	range (mm)	range (mm)	range (mm)	range (mm)
Conventional TSS	0.1-0.3	0.2-1	0.4-2.7	1.2-4.7
TSS-CF	0.1-0.5	0.5-1.2	0.5-3.9	1.8-6
TSS with CF-CSCNP	0.1-1	0.5-1.8	0.5-6	3.5-9.5

Table S 3. Variation in water output with time for TSS and modified TSS

Days of experiment	Full-day water yield enhancement of TSS-CF, compared to Conventional TSS (%)	Full-day water yield enhancement of TSS with CF-CSCNP, compared to Conventional TSS (%)
Start of the experiment	38.49	170.25
30 th day	37.04	167.80
60 th day	35.56	165.50
90 th day	32.95	163.74
120 th day	30.78	161
150 th day	27.85	158.95
180 th day	25.78	155.13

Water Quality Standard

- **Desirable, acceptable, or tolerable limits:** It refer to the maximum amount of a specific salt or element that can be present in water. Water with that particular element in excess of that level is unfit to drink. This limit needs to be implemented.
- **Permissible limit:** On the other hand, the permissible limit for that element is the maximum amount of water that can be consumed if no other source of water is available.

Therefore, we should routinely drink water with total hardness below 200 ppm, which is the desirable and acceptable limit for water. However, we may consume water of up to 600 ppm total hardness if there is no alternate source of water available.