Supplementary data

**Sub-ambient radiative cooling realized using CaCO3 microparticle-based single layer without metal reflector for entire**

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The Supporting Information contains:

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**Figure. S1** XRD 2*Ɵ* scan data of CaCO3 powders



Figure. S2. Optical properties of CaCO3 on glass in accordance with thickness. (a) Absorption and (b) transmittance.

Table S1. Average absorption (0.3-2.5 µm), emissivity (8-13 µm) and net cooling power at 300 K in accordance with thickness of CaCO3 composite.

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| --- | --- | --- | --- |
| Sample | Solar power absorption ratio(0.3-2.5 µm) | Average emissivity(8-13 µm) | Net cooling power at 300 K(W/m2) |
| 130 µm | 0.027 | 0.883 | 105.5 |
| 240 µm | 0.042 | 0.902 | 95.0 |
| 350 µm | 0.041 | 0.896 | 93.1 |
| 500 µm | 0.079 | 0.886 | 59.7 |

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**Figure. S3. (**a) Solar power density of AM1.5 direct + circumsolar and (b) ideal and (c) mid-latitude atmospheric transmittance window in range of 0.3–15 μm.1,2 (d) Transmittance of
LDPE film using wind shield when measuring outside.

**References**

1. Berk, A. *et al.* MODTRAN® 6: A major upgrade of the MODTRAN® radiative transfer code. in *Workshop on Hyperspectral Image and Signal Processing, Evolution in Remote Sensing* vols 2014-June (IEEE Computer Society, 2014).

2. S. D. Lord, *A New Software Tool for Computing Earth's Atmospheric Transmission of Near- and Far-Infrared Radiation,* Vol. 103957, Ames Research Center, Moffett Field, CA, USA **1992**