

## Supplementary Information

# Engineered spectrally selective and spatially segmented emittances for infrared camouflage textiles

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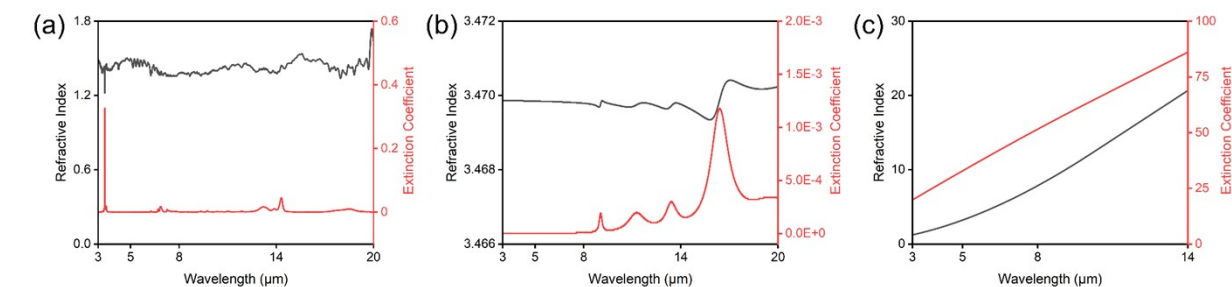
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Fig. S1. Refractive indices and extinction coefficients of (a) SEBS, (b) Si, and (c) Ag.

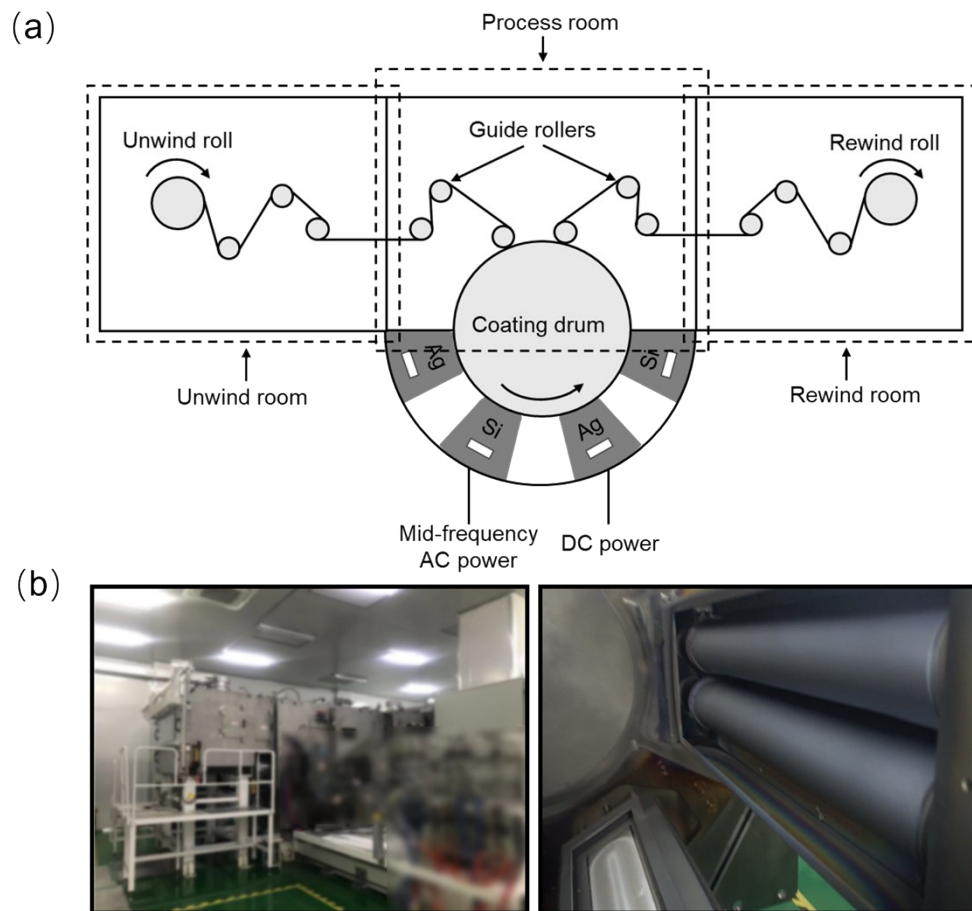


Fig. S2 (a) Schematic illustration and (b) facility photograph of the R2R magnetron sputtering system.

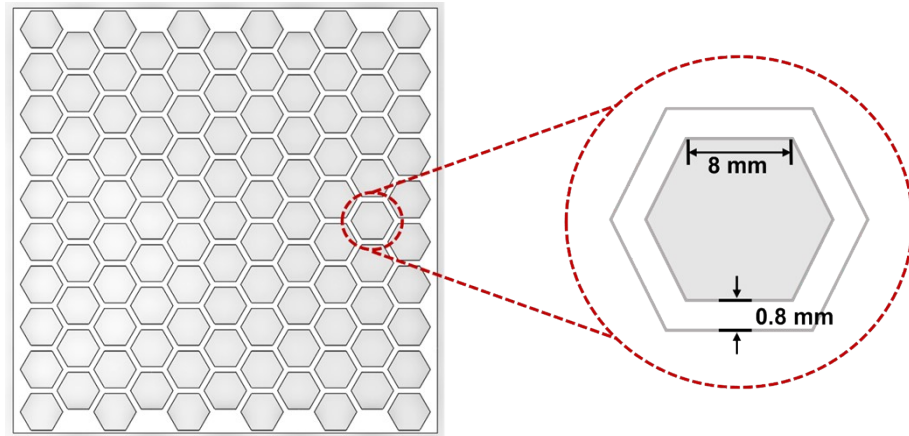


Fig. S3. Schematic diagram of the 3D-printed mask used for spray-coating of a honeycomb-patterned SEBS layer.

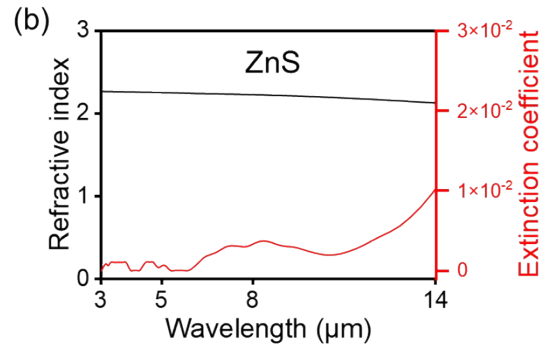
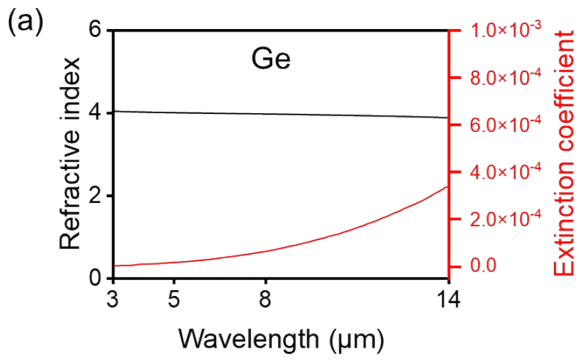


Fig. S4. Refractive indices and extinction coefficients of (a) Ge and (b) ZnS.

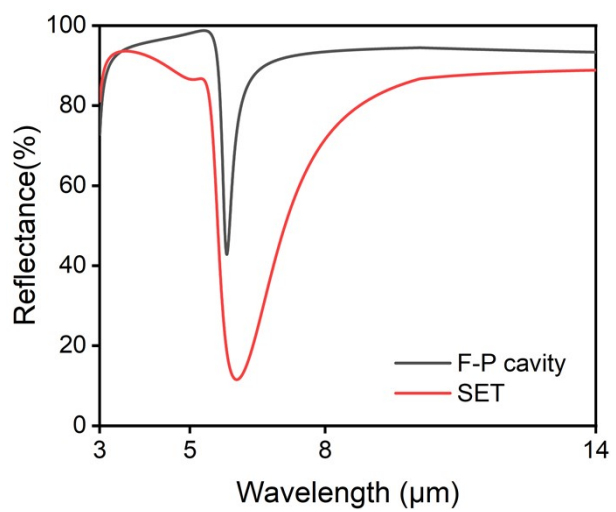


Fig. S5. Simulated reflectance spectra of the F-P cavity and the SET.

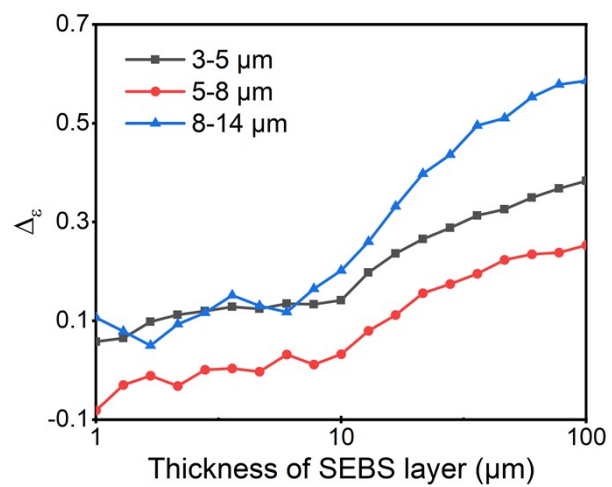


Fig. S6. Relationship between the thicknesses of SEBS and the emittances of the D-SET within the 3-5, 5-8, and 8-14  $\mu\text{m}$  wavelength bands.

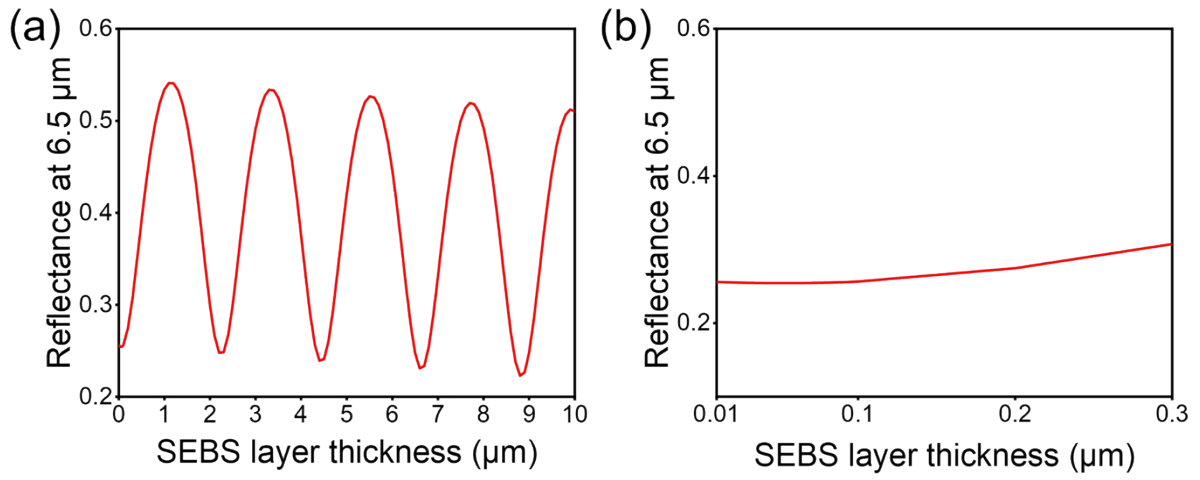


Fig. S7. Calculated reflectance spectra of the D-SET at 6.5  $\mu\text{m}$  when the thicknesses of the SEBS overcoating vary from (a) 0.01 to 10  $\mu\text{m}$  and (b) 0.01 to 0.3  $\mu\text{m}$ .



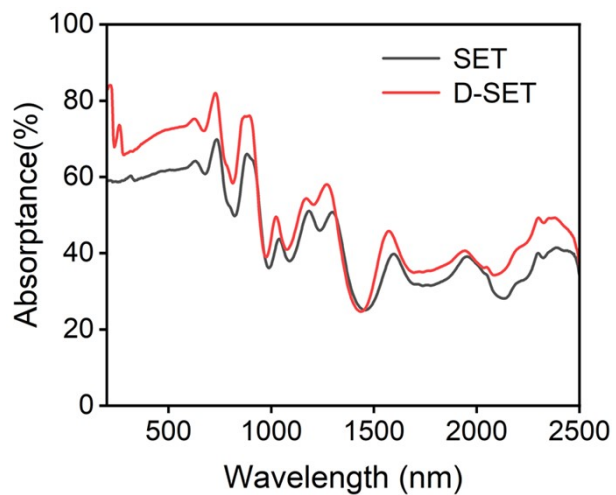


Fig. S8. Measured solar absorptance spectra of the SET and the D-SET.

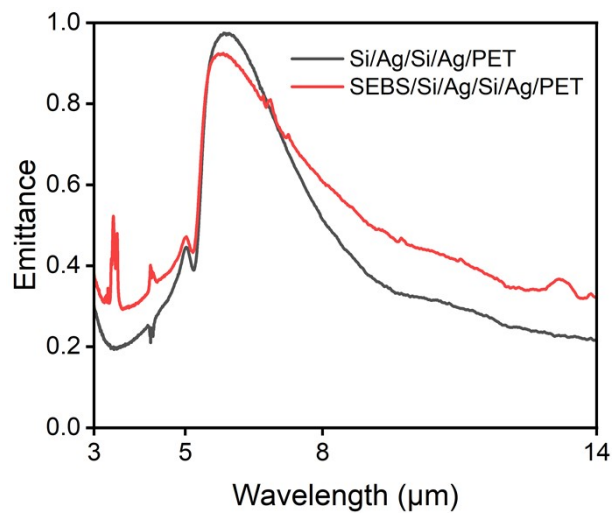


Fig. S9. Measured emittance spectra of the Si/Ag/Si/Ag structure prepared on the polyethylene terephthalate (PET) substrate. The black and red lines represent the emittance spectra with and without the SEBS overcoating layer, respectively.

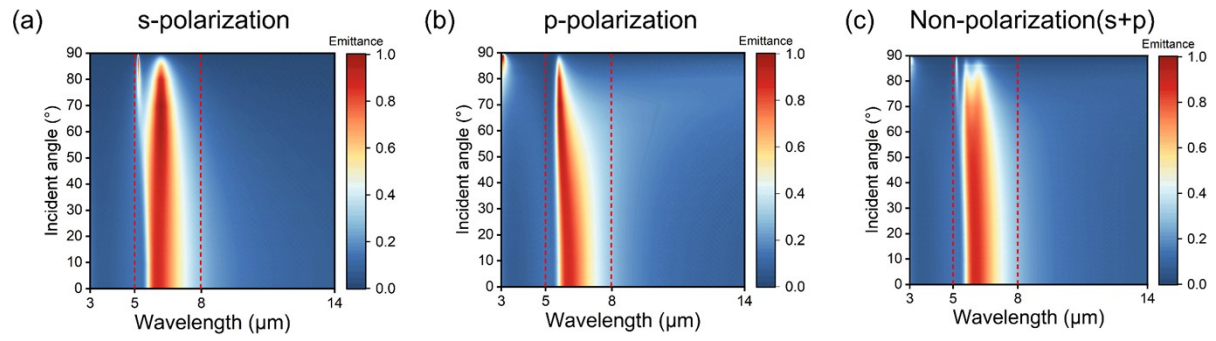


Fig. S10. Calculated emittance spectra of the SET at various incident angles with (a) S-polarization, (b) P-polarization, and (c) non-polarization.

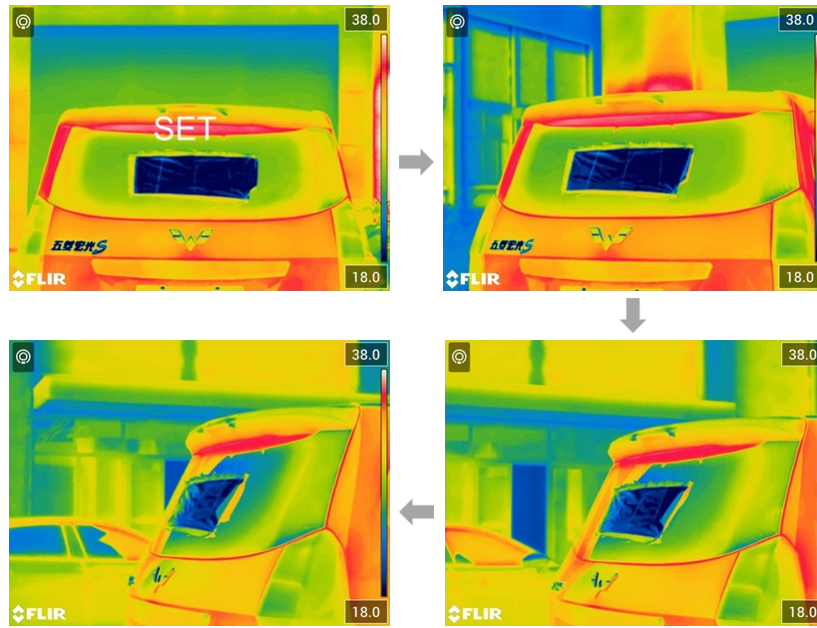


Fig. S11. Demonstration of IR camouflage performance of the SET covered on an outdoor car at different viewing angles.

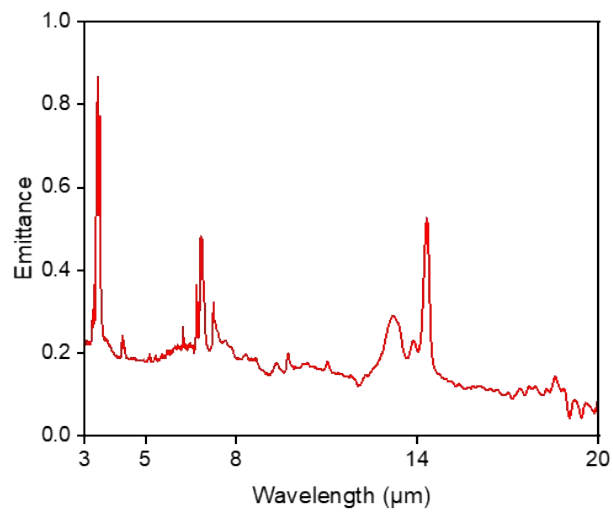


Fig. S12. Measured emittance spectra of the control with a broadband low emittance prepared by magnetron sputtering 100 nm-thick Ag on a nylon substrate.

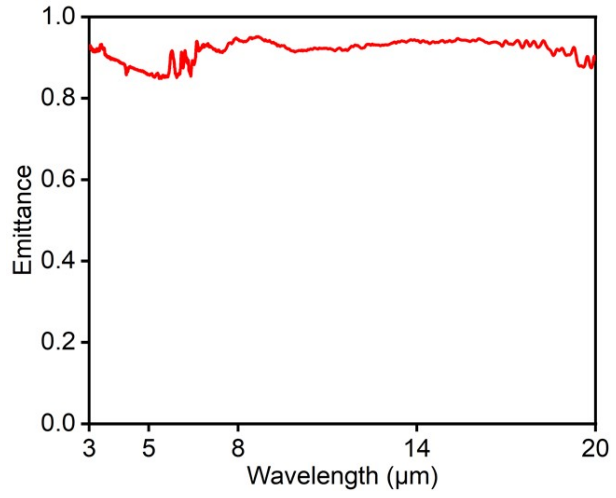


Fig. S13. Emittance spectrum of the high-emissivity paint sprayed onto the thermoelectric cooler (TEC).

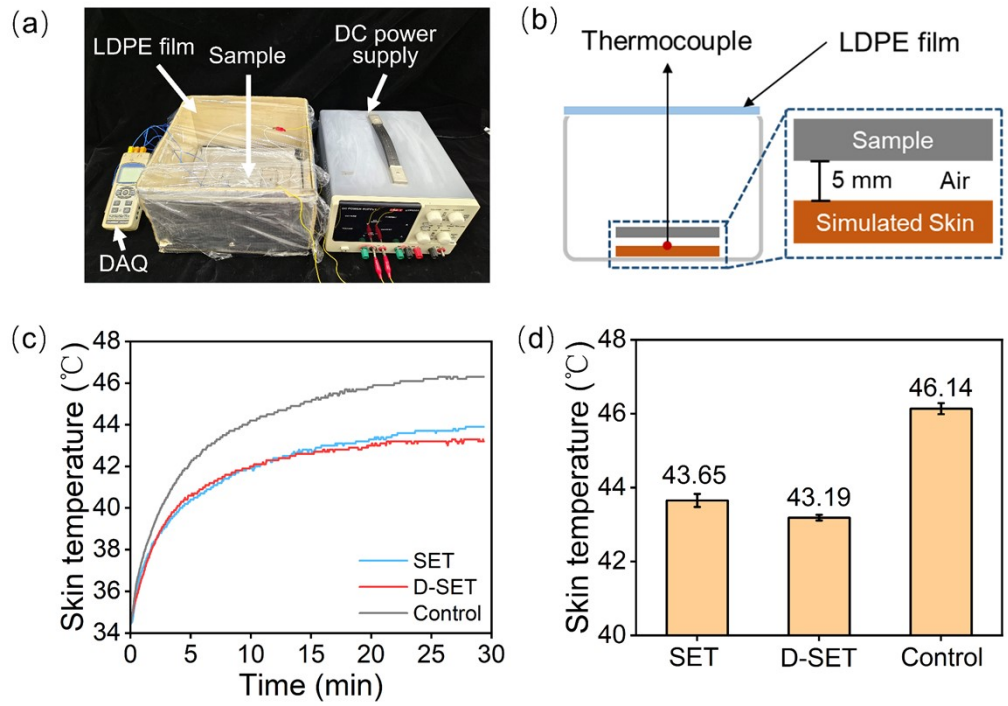


Fig. S14 (a) Experimental setup for thermal comfort characterization and (b) schematic illustration. (c) Measured temperature profiles of the simulated skin covered by the SET, the D-SET, and the control with a broadband low emittance. (d) Measured steady-state temperatures of the simulated skin covered with the SET, the D-SET, and the control.

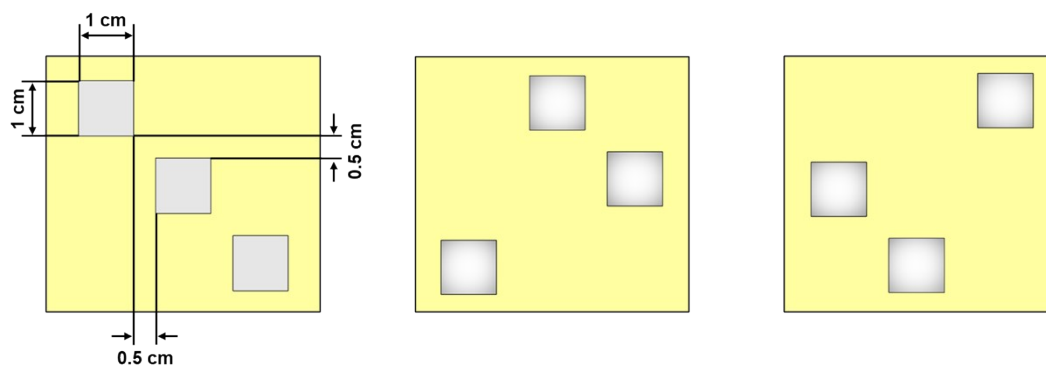


Fig. S15. Schematic diagram of the masks for the preparation of the IR-colorful spectrally selective emittance textile (IRC-SET) using a blade coating method.



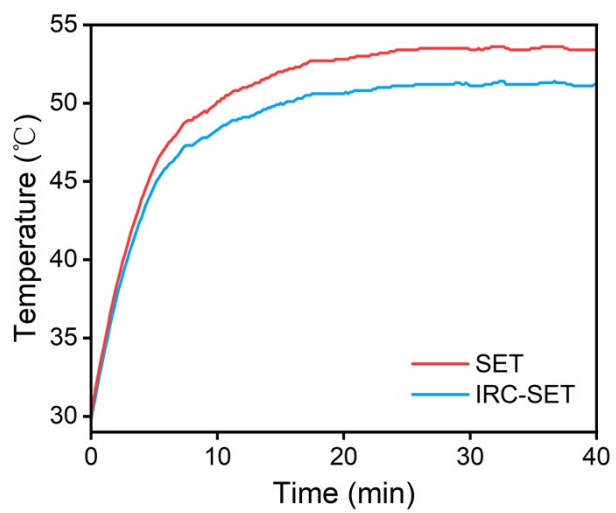


Fig. S16. Measured temperature curves for the SET and the IRC-SET.