Control over emissivity of zero-static-power thermal emitters based on phase-changing material GST

1. Infrared property of amorphous and crystalline GST

To ... , a 360 -nm ... GST ...

... 180 ... 1.5 ...

... GST ...

(Fig. S1a) ... GST ... -Si ... GST ... -Si ...

... 0 ... 1000 ...

GST ... GST ... (Fig. S1b) ...

...

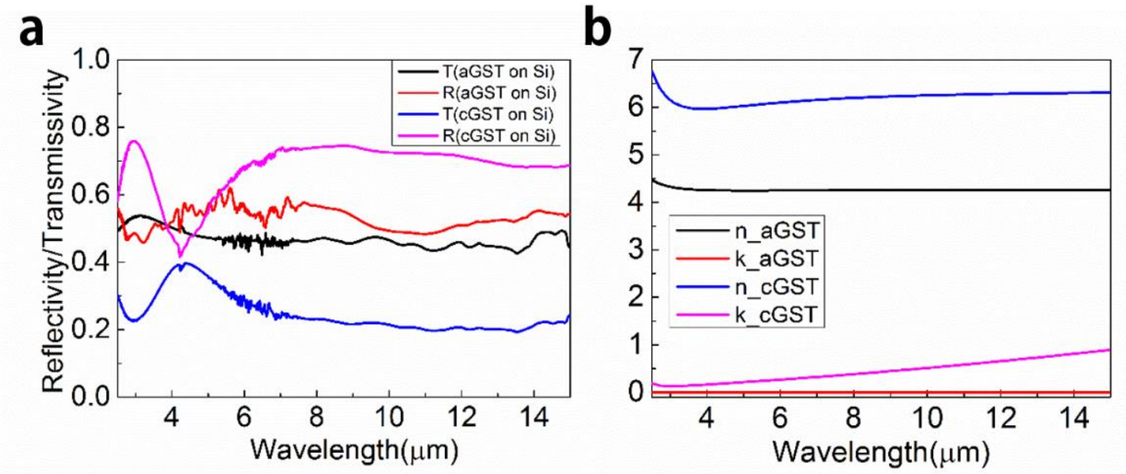
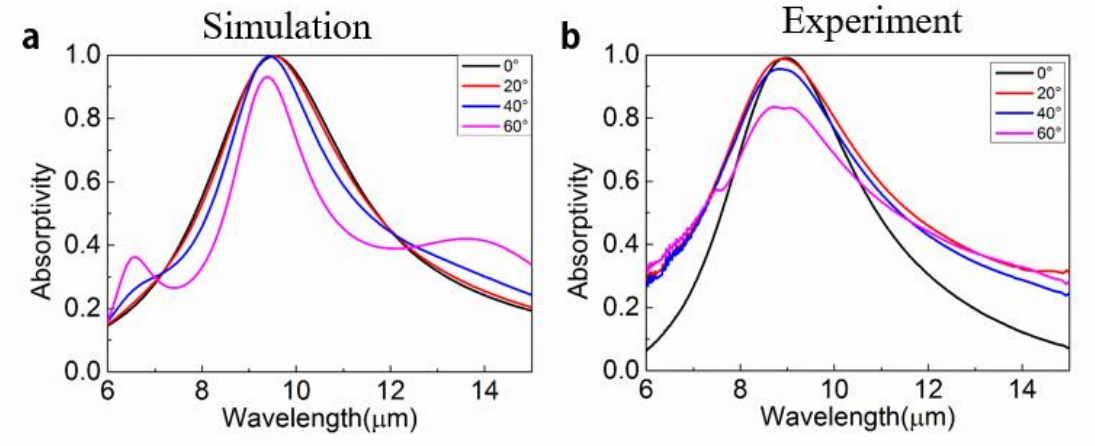


Fig. S1. (a) ... (T) ... (R) ...

360-nm ... GST ... -Si ... GST ... -Si ... (b) ...

...

2. Angular-dependent absorption of the cGST-Au sample



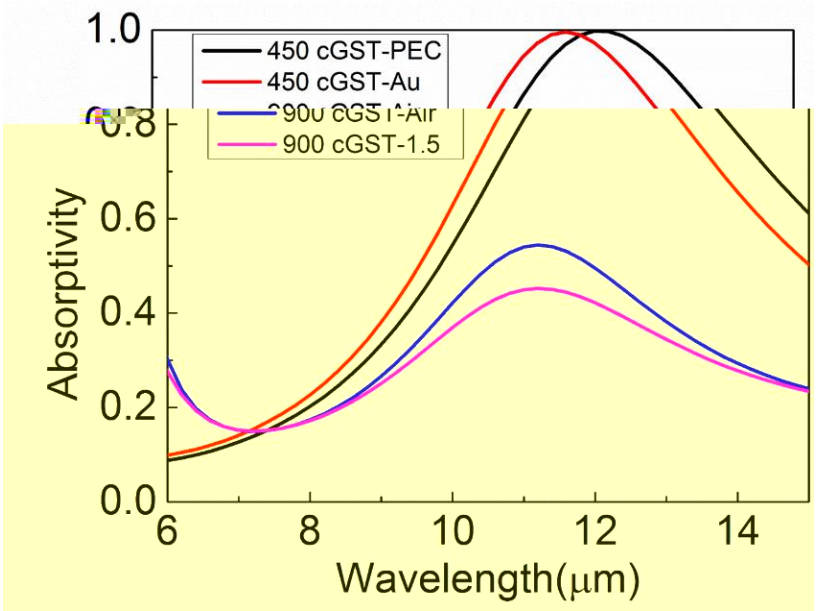
3. The role of the metal film in the GST-Au absorber/emitter

. S): (1) 450 nm

(900 nm

(*n*±.5).

50%.



1.5.

γ_i, γ_1 and γ_2, $|s_i|^2$ is

ω_0,

a :

$$\frac{d}{dt}a = \left(j\omega_0 - \gamma_i - \gamma_1 - \gamma_2\right)a - j\sqrt{2\gamma_1}s_i \qquad \text{(S1)}$$

A)

$$A = \frac{4\gamma_i\gamma_1}{\left(\omega-\omega_0\right)^2 + \left(\gamma_i+\gamma_1+\gamma_2\right)} \qquad \text{(S2)}$$

$\gamma_1=\gamma_2$), 50%

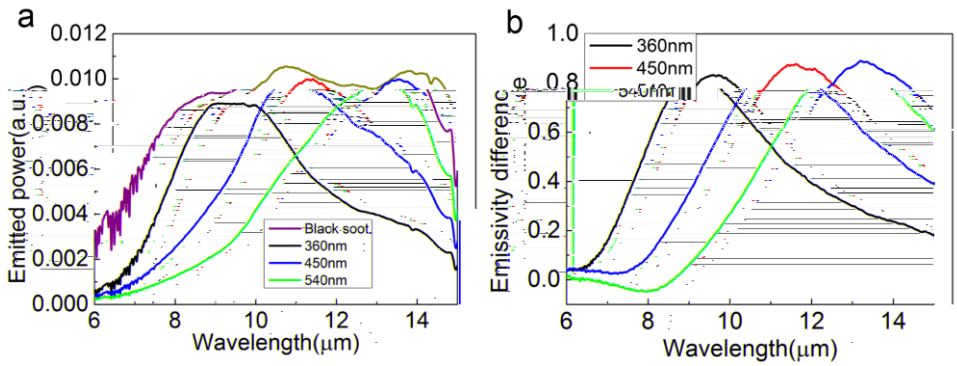
$\gamma_1=\gamma_i/2$. γ_2), 100%

$\gamma_1= \gamma_i$).

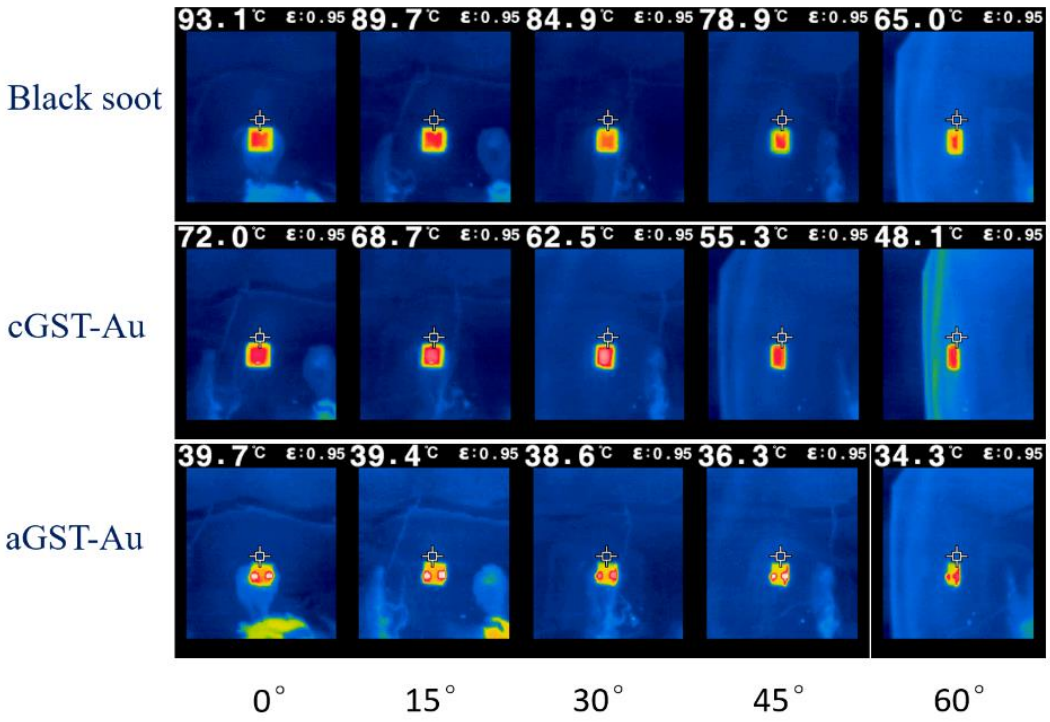
. *Opt. Express.* 2010; **18**: 8367-8382.

. *IEEE J. Quantum Electron.* 1999; **35**: 1322-1331.

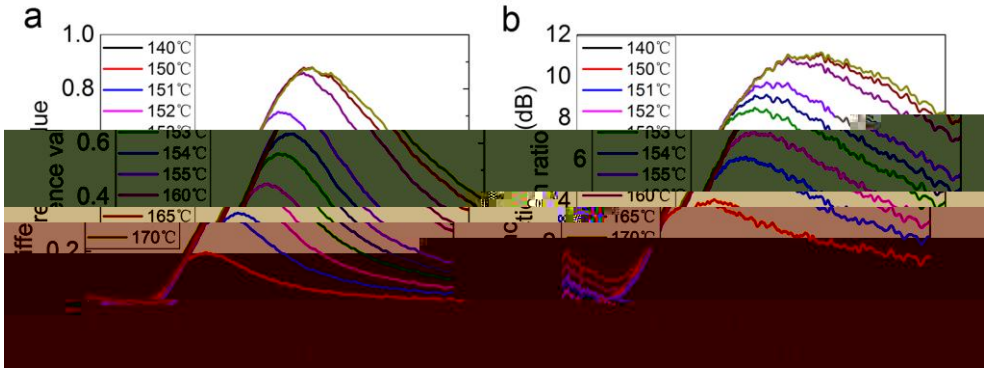
4. Emission spectra and emissivity differences of aGST-Au and cGST-Au emitters



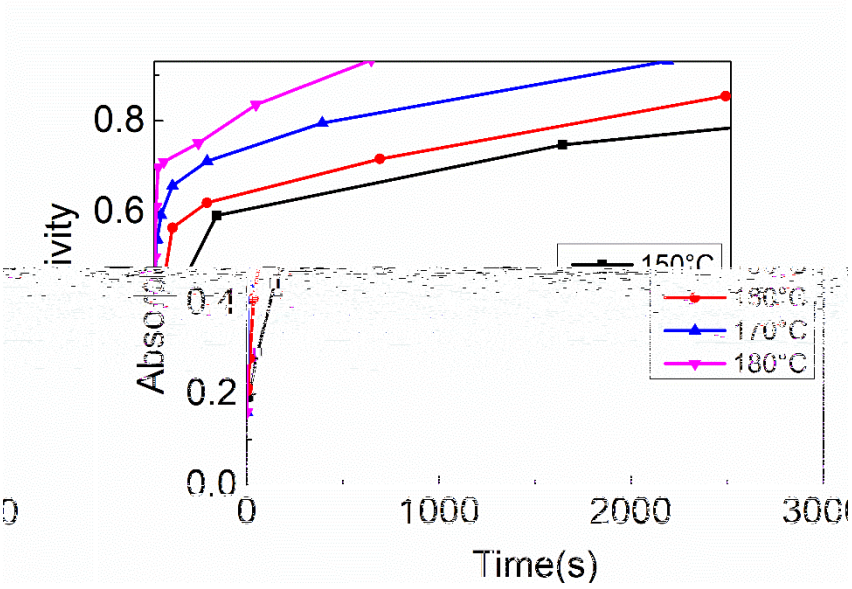
5. Angular-dependent infrared photographs of the black soot and the GST-Au emitter



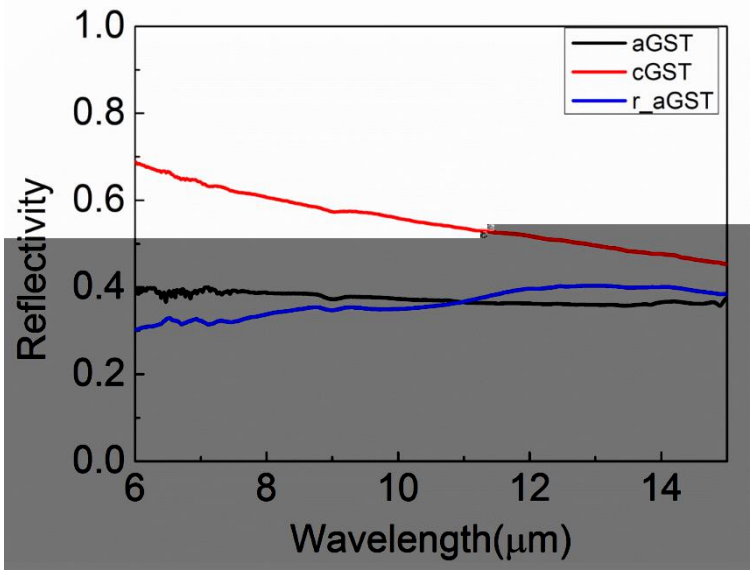
6. Tunable thermal emission of the GST-Au emitter by controlling the annealing temperature



7. Controlling the intermediate GST by both the annealing temperature and the annealing time.



8. Reamorphization of cGST



9. Dual-band absorption and emission of the samples.