

Figure S1. XRD pattern of  $\text{Ti}_3\text{O}_5$ .

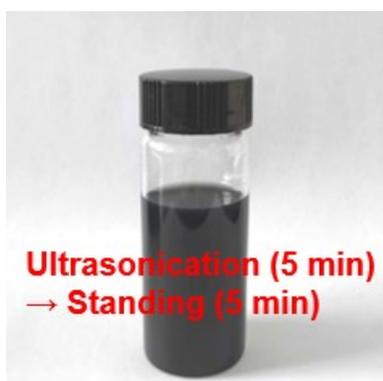


Figure S2. Dispersion of fillers in DMF with 0.5 vol% FAS-17 (US 5 min + rest 5 min)

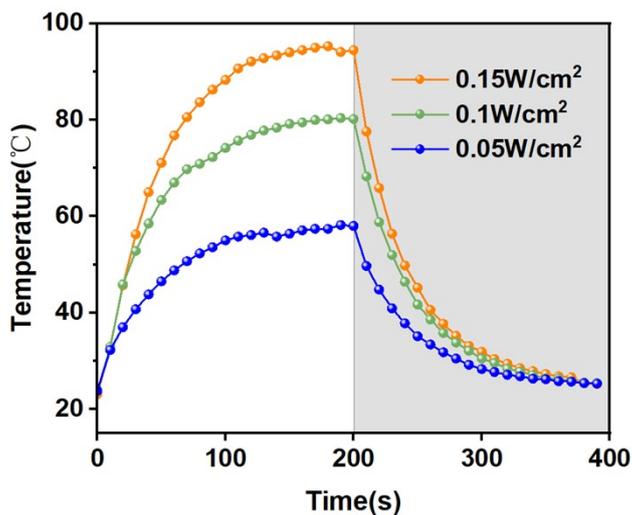


Figure S3. Photothermal response performance of FTSE coating

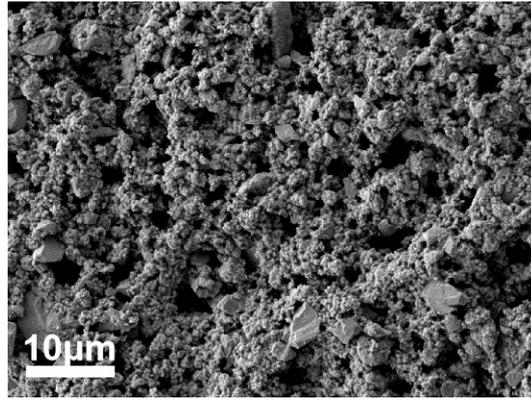


Figure S4. Surface morphology of the FTSTF coating.

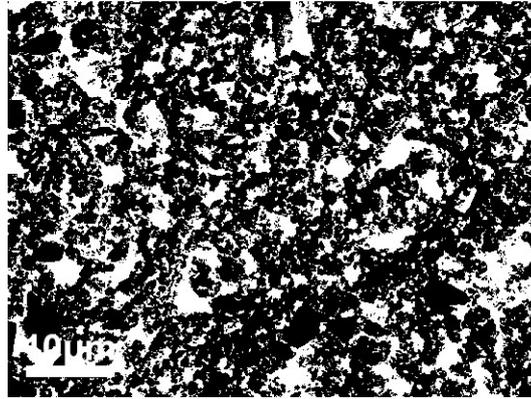


Figure S5. Pore distribution on the surface of the FTSTF coating.

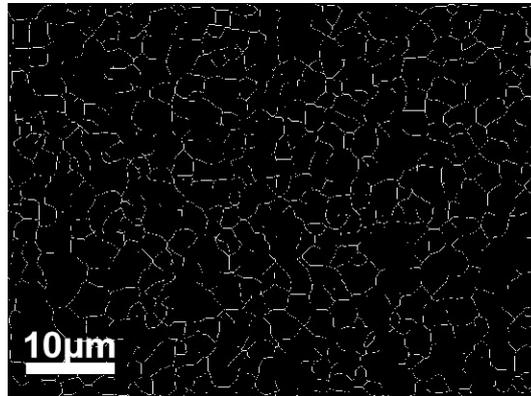


Figure S6. Skeletonized extraction of the protruding structures on the FTSTF coating surface.



Figure S7. Macroscopic image and water contact angle of the FTST sample.

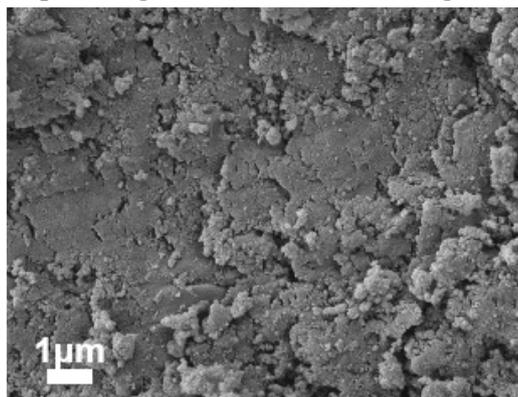


Figure S8. Surface morphology of the FTSTF coating after abrasion.

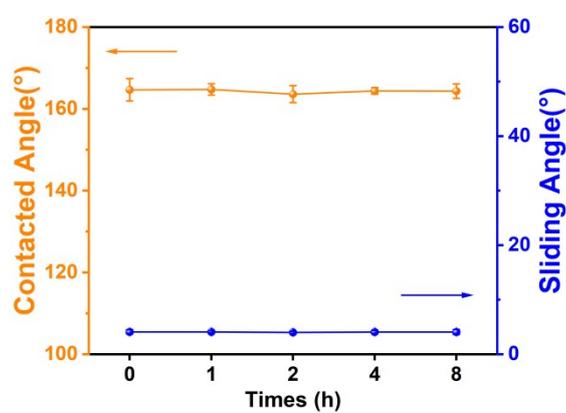


Figure S9. Static water contact angle (CA) and sliding angle (SA) of the FTSTF coating after 0.2 W/cm<sup>2</sup> simulated sunlight irradiation