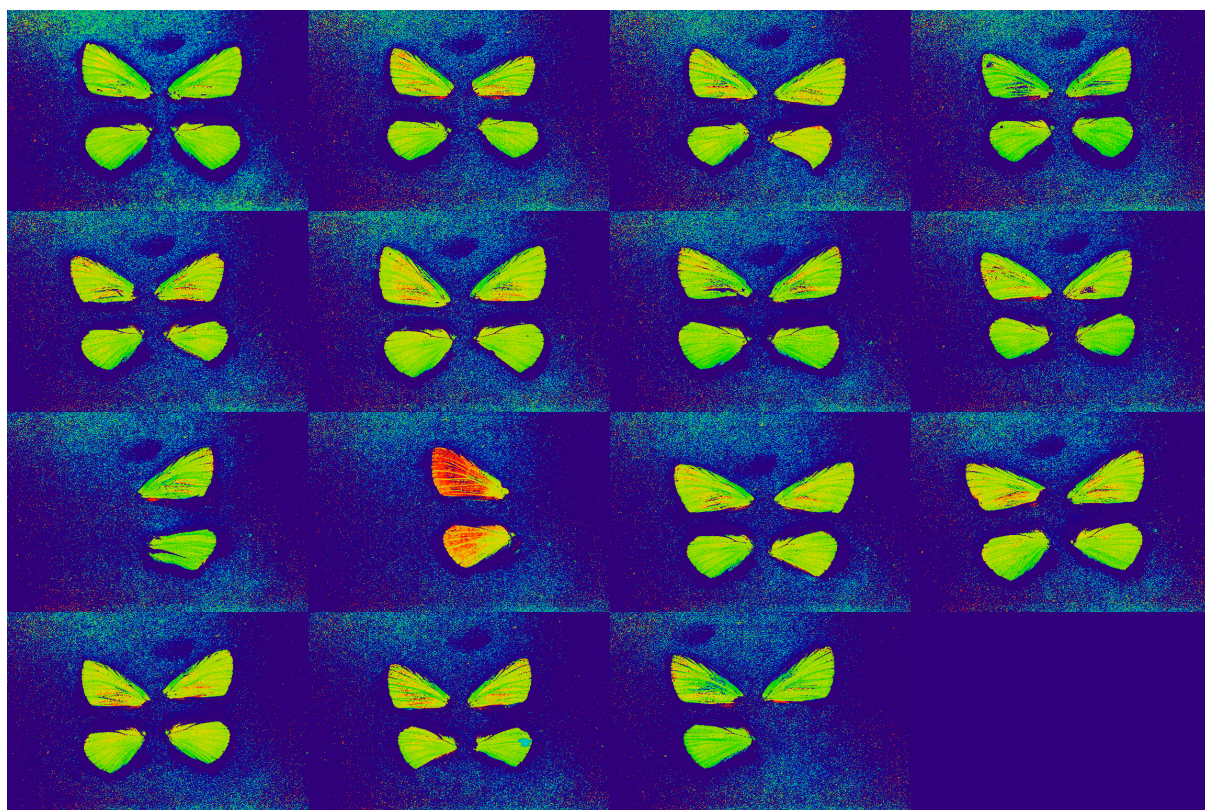


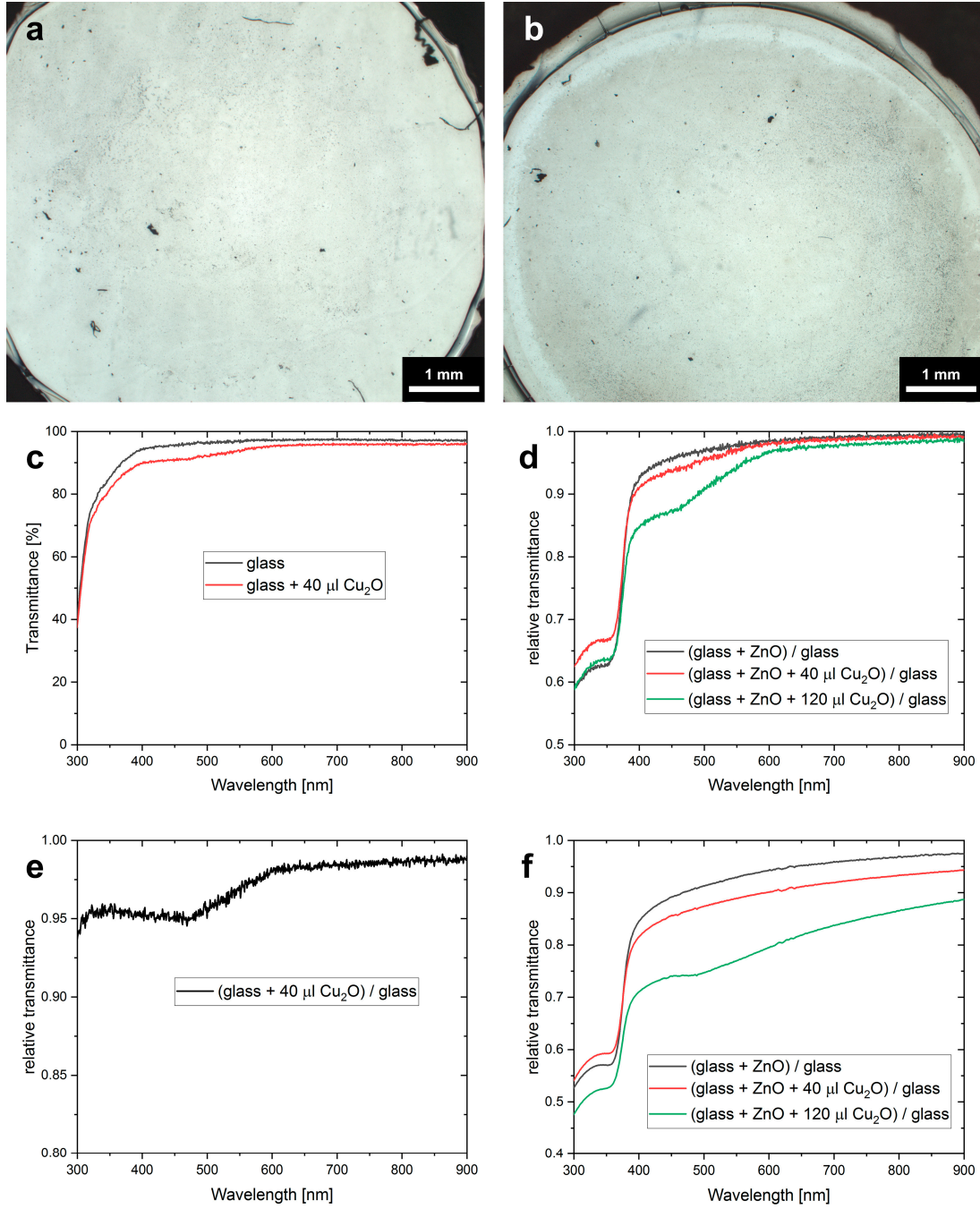
**Supplementary Information**  
on  
**Spectral Engineering of Hybrid Biotemplated Photonic/Photocatalytic  
Nanoarchitectures**

by

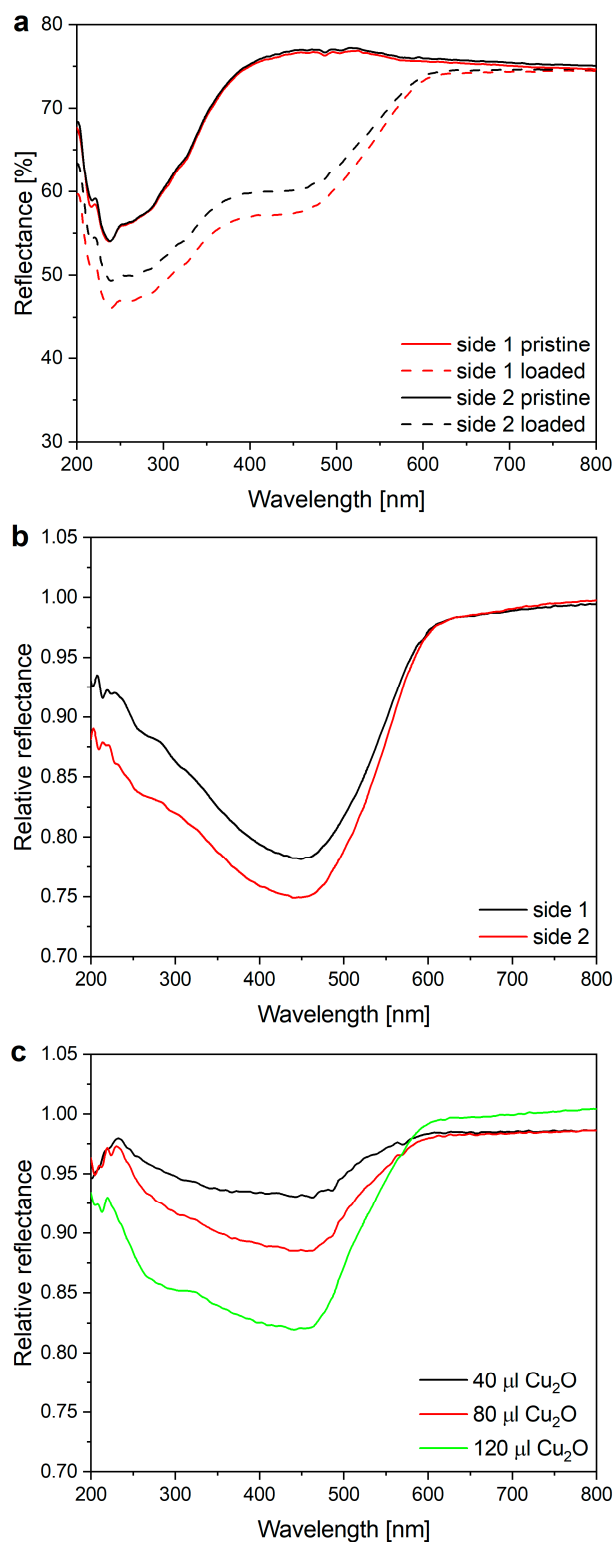
Gábor Piszter, Krisztián Kertész, Dávid Kovács, Dániel Zámbo, Zsófia Baji, Levente Illés,  
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**Figure S1.** Uniformity of the spectral modifications produced by the deposition of 15 nm of conformal ZnO coating on the wings of male *Polyommatus icarus* butterflies in HSB visualization. The reddish wings are in pristine state, while all the others have received the coating in the same deposition run. The digital photographs have been processed as detailed in [49].

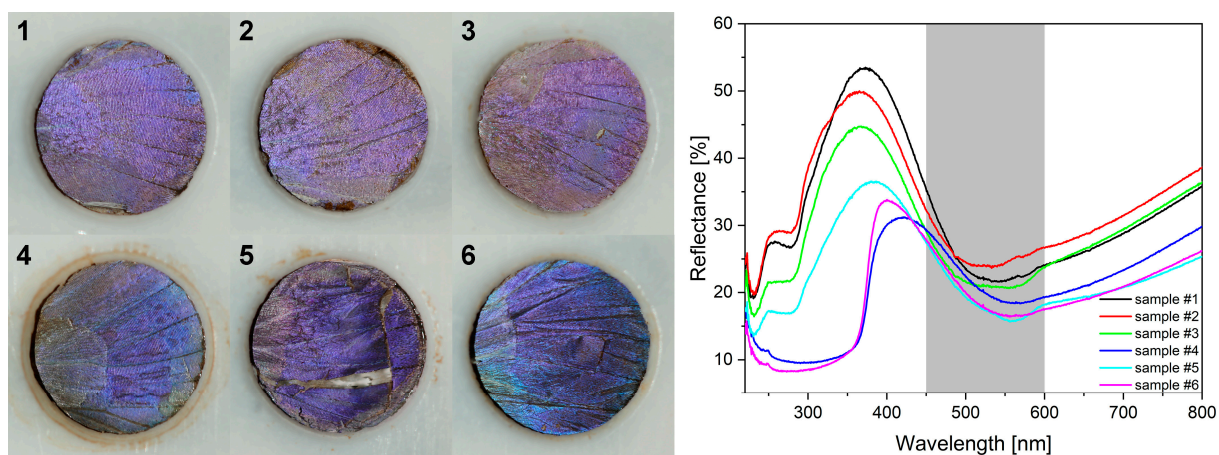


**Figure S2.** Optical micrographs in transmitted light and light transmission through the samples prepared by drop drying  $\text{Cu}_2\text{O}$  sol into the circular hole of the PTFE frames glued by PMMA onto glass and glass covered by 15 nm ZnO respectively. (a) 40  $\mu\text{l}$   $\text{Cu}_2\text{O}$  sol on glass; (b) 40  $\mu\text{l}$   $\text{Cu}_2\text{O}$  sol on ZnO covered glass; (c) transmittance measured with the integrating sphere on the sample in (a); (d) transmittance measured with the integrating sphere on the sample in (b), note in (d) the cutoff at 380 nm due to the ZnO layer, an additional spectrum is shown after increasing the amount of  $\text{Cu}_2\text{O}$  on the sample; (e) the ratio of transmittances (glass + 40  $\mu\text{l}$   $\text{Cu}_2\text{O}$ )/glass from (c), below 300 nm due to the low light intensity the noisy results are not shown; (f) transmittance measured with the illuminating and light collecting fibers in a collinear arrangement, with the sample in-between on the sample in (b), note in (f) the cutoff at 380 nm due to the ZnO layer, an additional spectrum is shown after increasing the amount of  $\text{Cu}_2\text{O}$  on the sample.



**Figure S3.** (a) Reflectance of filter paper loaded with  $\text{Cu}_2\text{O}$  by placing the piece of paper in  $\text{Cu}_2\text{O}$  sol stirred magnetically. Both sides of the loaded filter paper were measured, pristine filter paper was used as comparison. In (b), the decrease in reflectance due to the  $\text{Cu}_2\text{O}$  loading is shown using the pristine paper as a reference; (c) the gradual decrease of reflectance of the same type of filter paper (kept in horizontal position) after loading on the upper surface 40, 80, and 120  $\mu\text{l}$  of  $\text{Cu}_2\text{O}$  sol using the pristine paper as a reference.





**Figure S4.** Photographs (left) of the wing samples used (after the first run of measurements) in the photocatalytic experiments and the corresponding reflectance spectra (right): **(1)** type-1 sample, without ethanol pretreatment; **(2)** type-1 sample with ethanol pretreatment; **(3)** type-1 sample with 120  $\mu\text{l}$  of  $\text{Cu}_2\text{O}$  sol drop dried; **(4)** type-2 sample with 120  $\mu\text{l}$  of  $\text{Cu}_2\text{O}$  sol drop dried; **(5)** type-1 sample with 120  $\mu\text{l}$  of  $\text{Cu}_2\text{O}$  sol drop dried followed by the deposition of 5 nm of  $\text{ZnO}$ ; **(6)** type-2 sample with 120  $\mu\text{l}$  of  $\text{Cu}_2\text{O}$  sol drop dried followed by the deposition of 5 nm of  $\text{ZnO}$ . The grey-shaded area marks the rhodamine B absorption.