

## Supporting Information

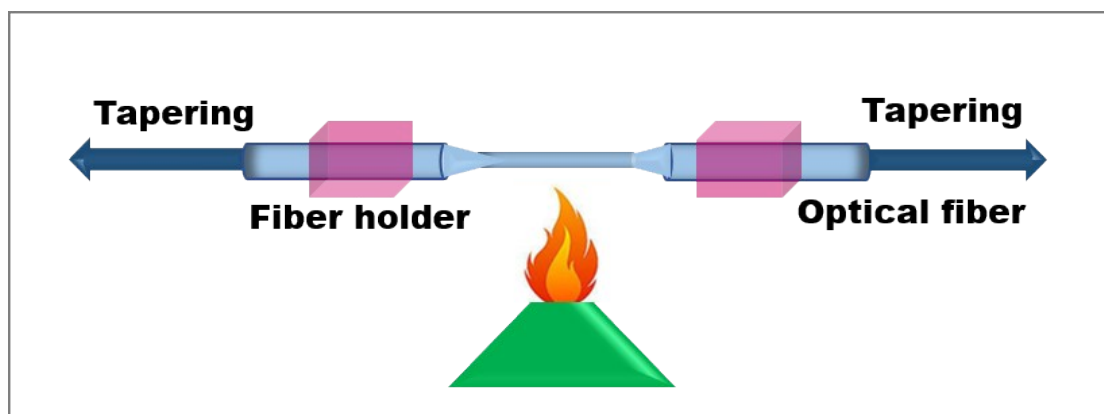
Photocatalysis in evanescent field: an in-situ approach to studying photocatalytic performance by tracing interfacial refractive index changes and kinetics

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**Fig. S1.** Schematic illustration of silica optical microfiber fabrication.

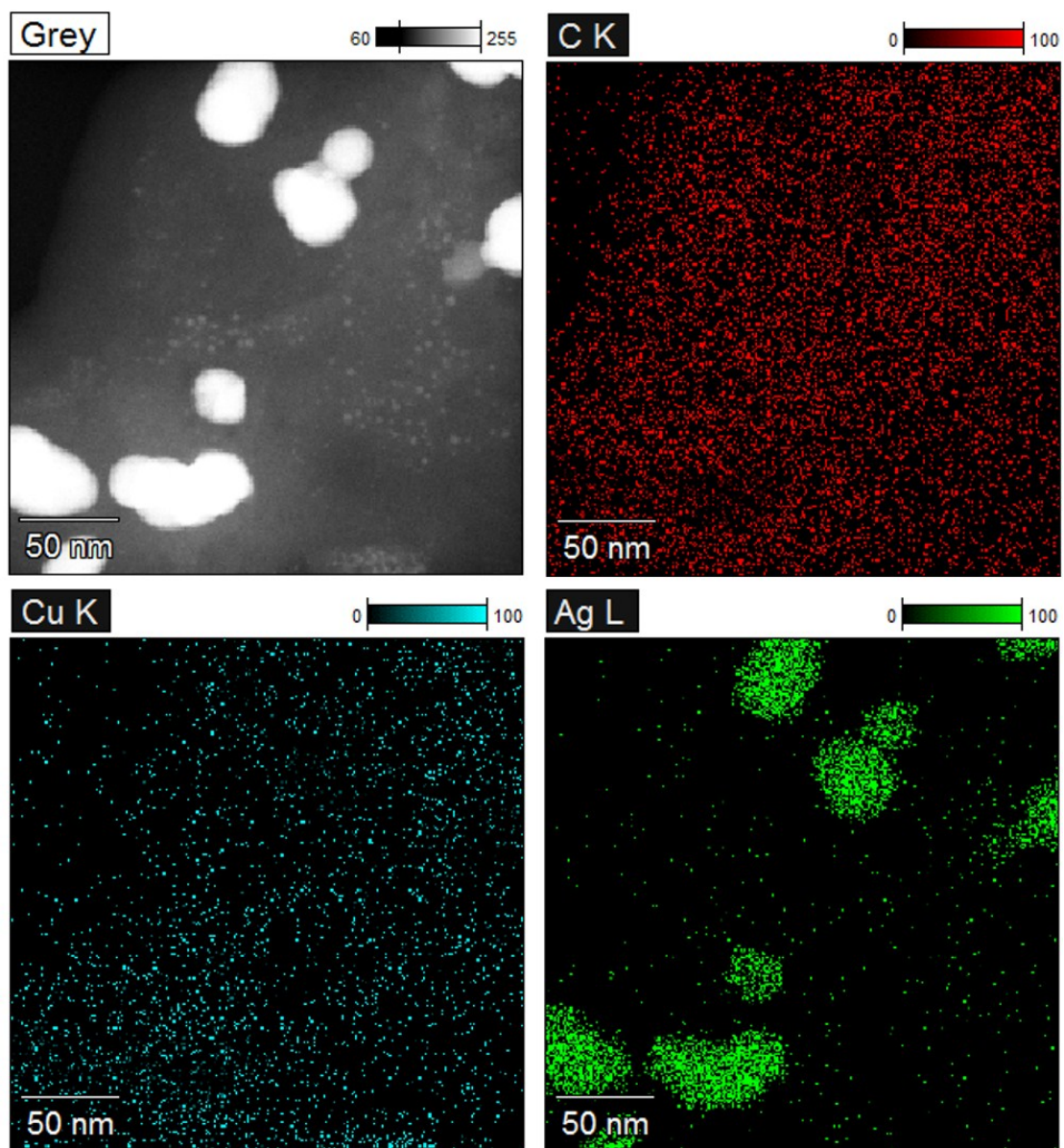


Fig. S2. SEM-EDS elemental mapping of  $\text{Cu}_2\text{O-Ag@rGO}$  (the corresponding elemental mappings of C, Cu and Ag).

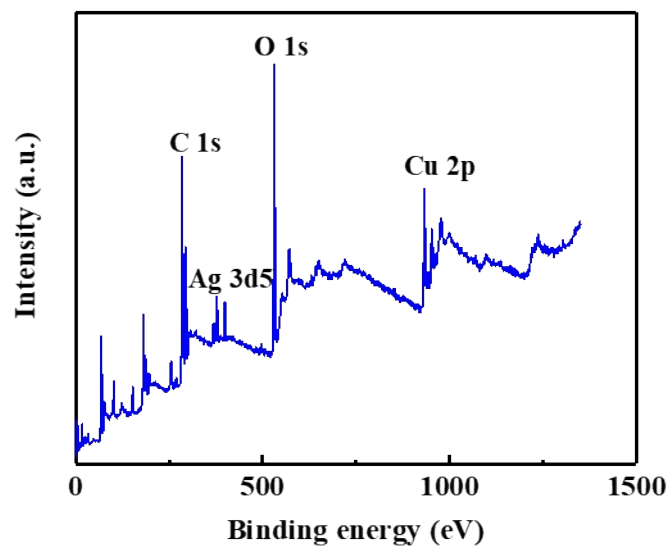


Fig. S3. XPS survey spectra of the  $\text{Cu}_2\text{O-Ag@rGO}$  composite.

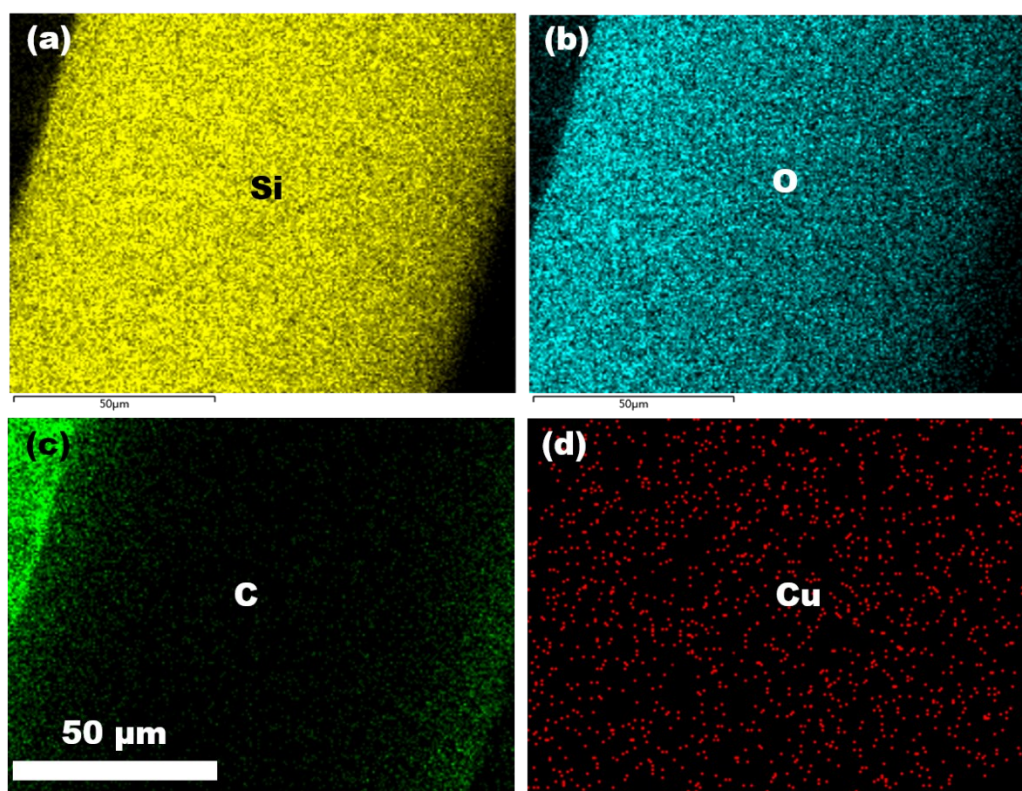
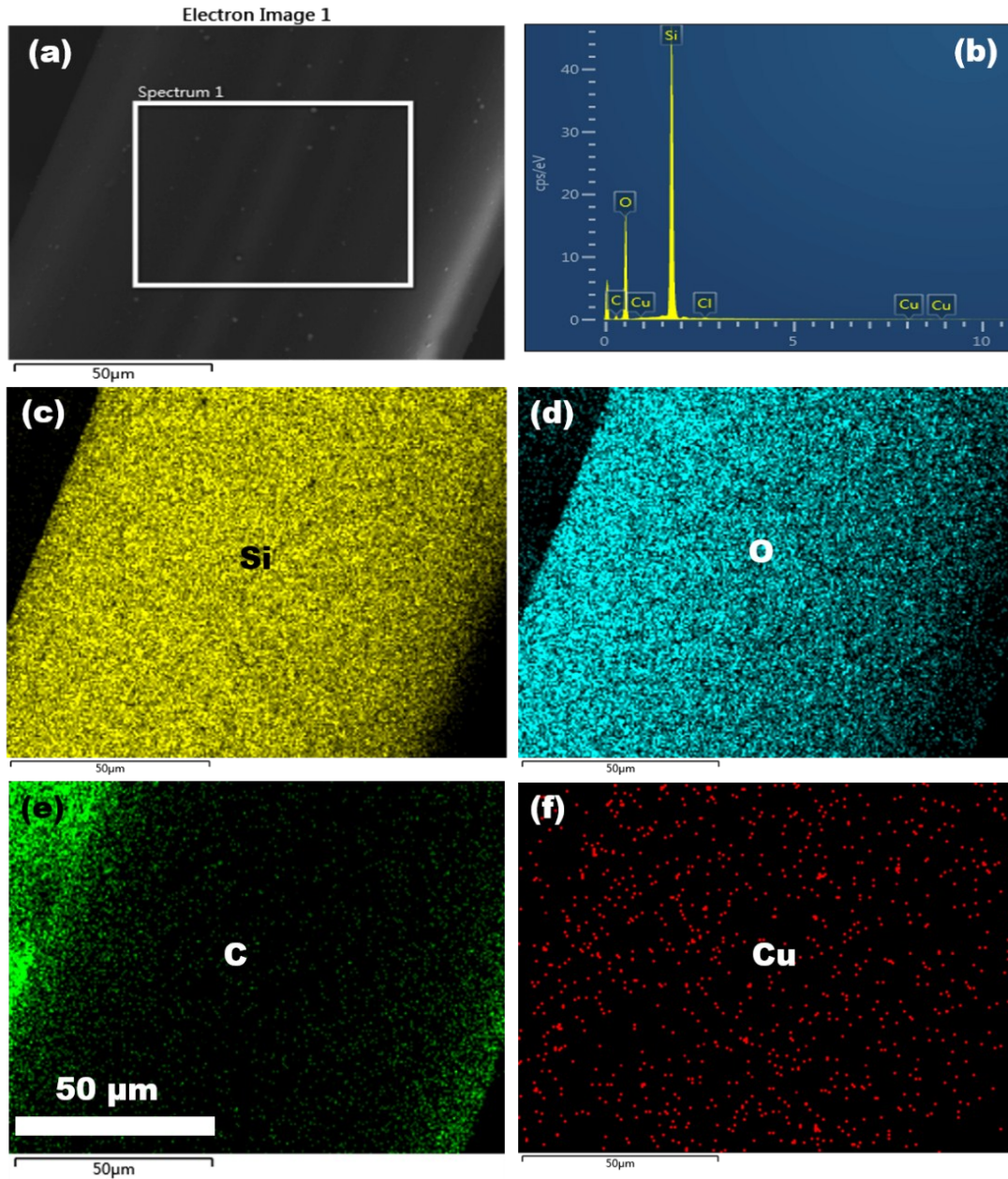
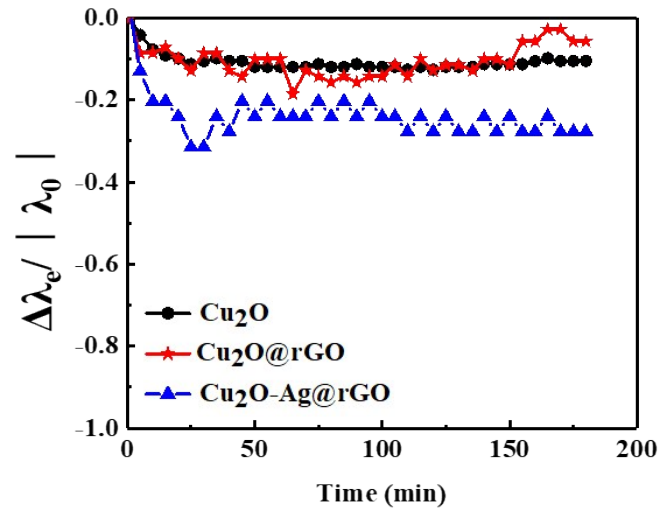


Fig. S4. EDX mapping images of (a) Si, (b) O, (c) C and (d) Cu elements on the microfiber with  $\text{Cu}_2\text{O@rGO}$  nanocomposites. (For the resolution limitation of the detector, a single-mode fiber with diameter of  $125\ \mu\text{m}$  was chosen to replace the microfiber, with modification process kept in the same.)





**Fig. S5.** (a) SEM image and (b) EDX spectrum, and EDX mapping images of (c) Si, (d) O, (e) C and (f) Cu elements on the microfiber with  $\text{Cu}_2\text{O}$  nanocomposites. (For the resolution limitation of the detector, a single-mode fiber with diameter of 125  $\mu\text{m}$  was chosen to replace the microfiber, with modification process kept in the same.)



**Fig. S6.** Optical wavelength shift recorded by the microfiber functionalized by photocatalysts under visible-light irradiation and without phenol solution.