BEILSTEIN JOURNAL OF NANOTECHNOLOGY

## Supporting Information

for

# Photocatalytic degradation of ofloxacin in water assisted by $TiO_2$ nanowires on carbon cloth: contributions of $H_2O_2$ addition and substrate absorbability

Iram Hussain, Lisha Zhang, Zhizhen Ye and Jin-Ming Wu

*Beilstein J. Nanotechnol.* **2025,** *16,* 1567–1579. doi:10.3762/bjnano.16.111

## Additional figures

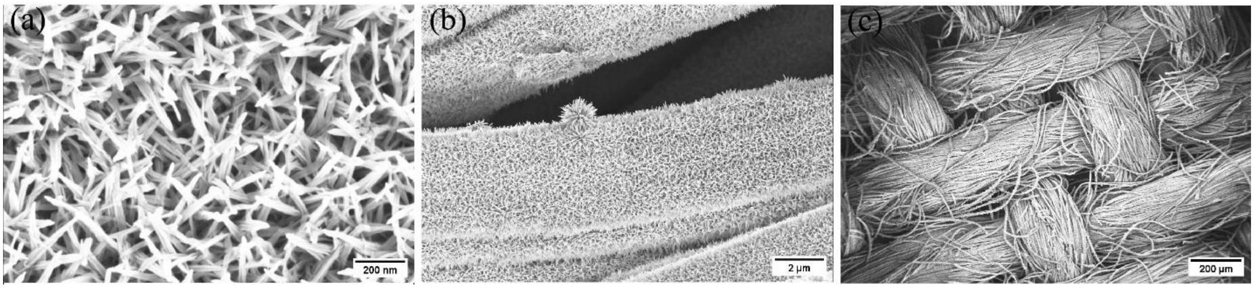


**Figure S1:** SEM images of hydrogen titanate nanowires grown on carbon cloth at different magnifications: (a) High-magnification image showing the dense network of hydrogen titanate nanowires, (b) intermediate magnification highlighting the uniform coating of nanowires on the individual carbon fibers, and (c) low-magnification image displaying the woven structure of the carbon cloth substrate.

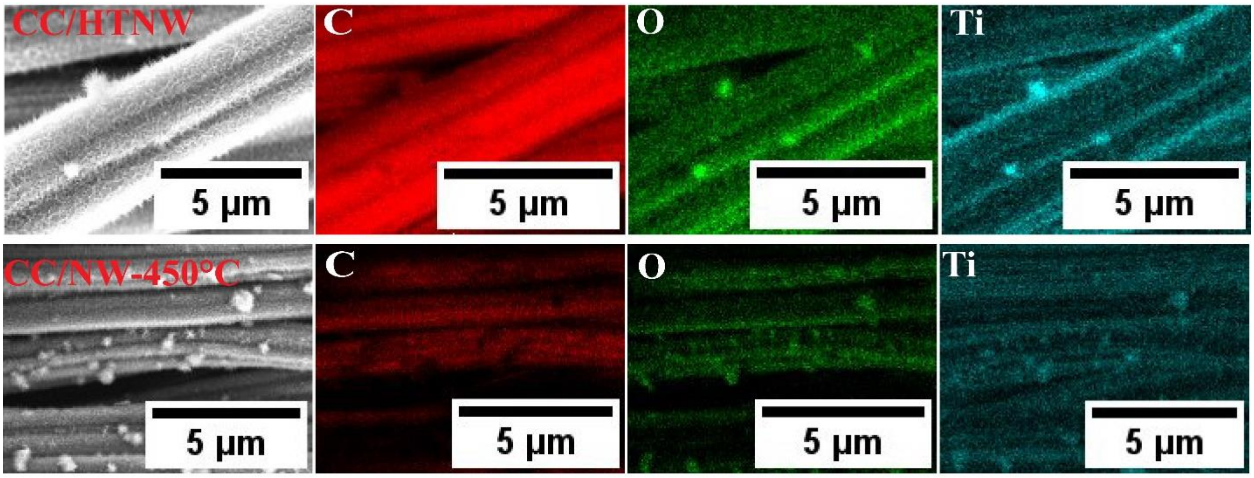


**Figure S2:** EDX elemental mapping images showing the distribution of Ti and O on the carbon cloth substrate coated with hydrogen titanate nanowires (CC/HTNW) and $TiO_2$ nanowires (CC/NW-450 °C).

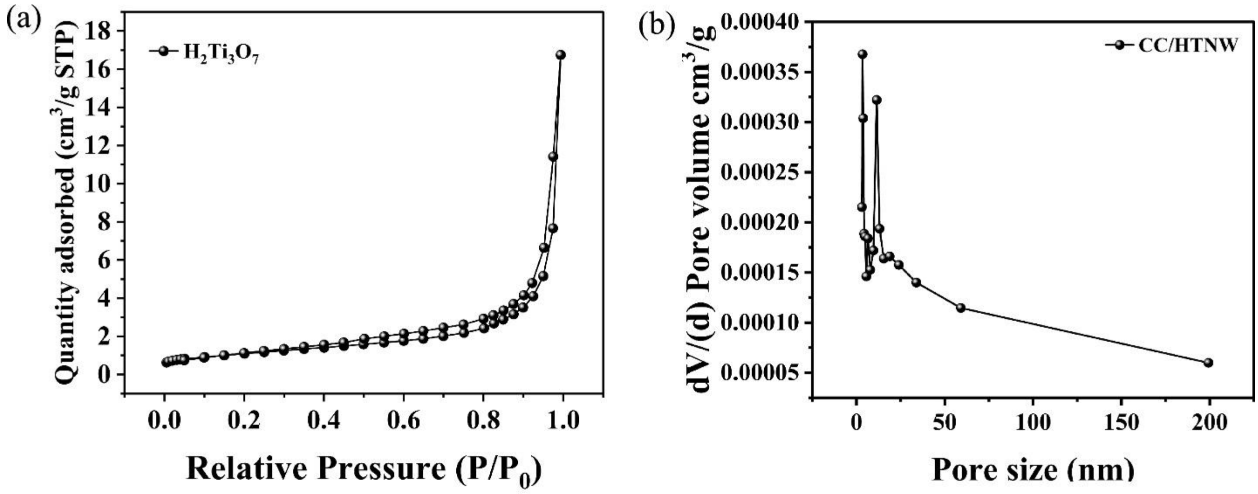


**Figure S3:** (a) Nitrogen adsorption-desorption isotherm for the carbon cloth substrate coated with hydrogen titanate nanowires (CC/HTNW), showing the quantity adsorbed ($cm^3/g$ STP) as a function of relative pressure ($P/P_0$). (b) Pore size distribution derived from the adsorption data, plotted as the derivative of pore volume ($dV/d\log(D)$) versus pore diameter.

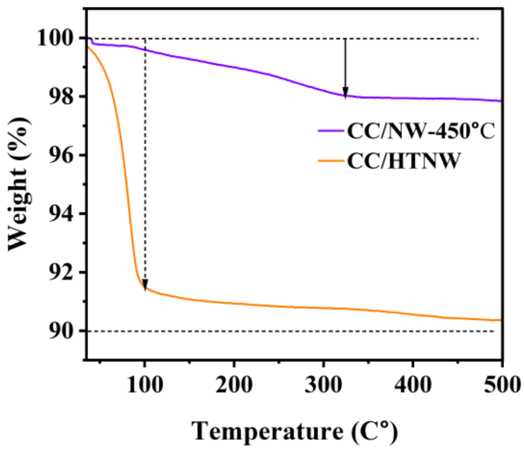


**Figure S4:** Thermogravimetric analysis (TGA) of hydrogen titanate (CC/HTNW) and the $TiO_2$ nanowires calcined at 450 °C (CC/NW-450 °C), precipitated on carbon cloth.

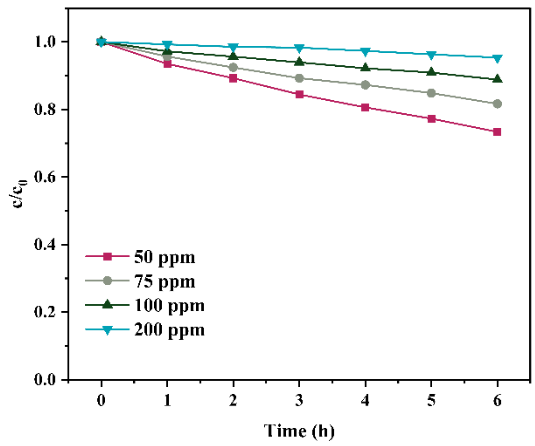


**Figure S5:** Dark adsorption of ofloxacin at different initial concentrations (50, 75, 100, and 200 ppm) in the presence of CC/NW-450 °C composite over 6 h. The plot shows the change in normalized concentration ($c/c_0$) with time, illustrating the adsorption capacity of the $TiO_2$ nanowire-coated carbon cloth before illumination.

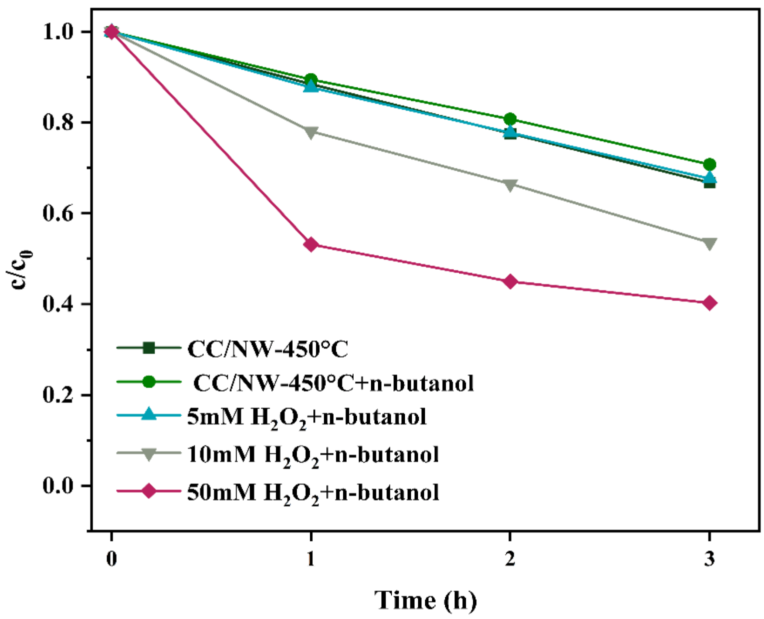


**Figure S6:** Normalized concentration ($c/c_0$) of ofloxacin over time in the presence of the CC/NW-450 °C and varying $H_2O_2$ concentrations, monitored with *n*-butanol as a probe for reactive oxygen species. Initial OFL concentration: 100 ppm.

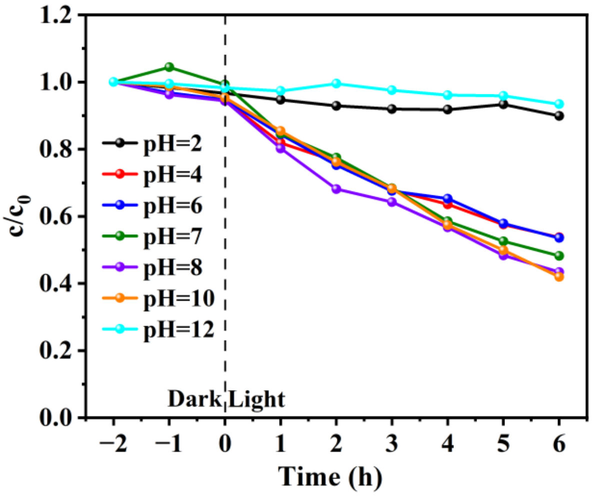


**Figure S7:** Photocatalytic degradation of ofloxacin (100 ppm) using CC/NW-450 ℃ under varying pH conditions (pH 2–12). The catalyst works in a wide pH range of 4–10.

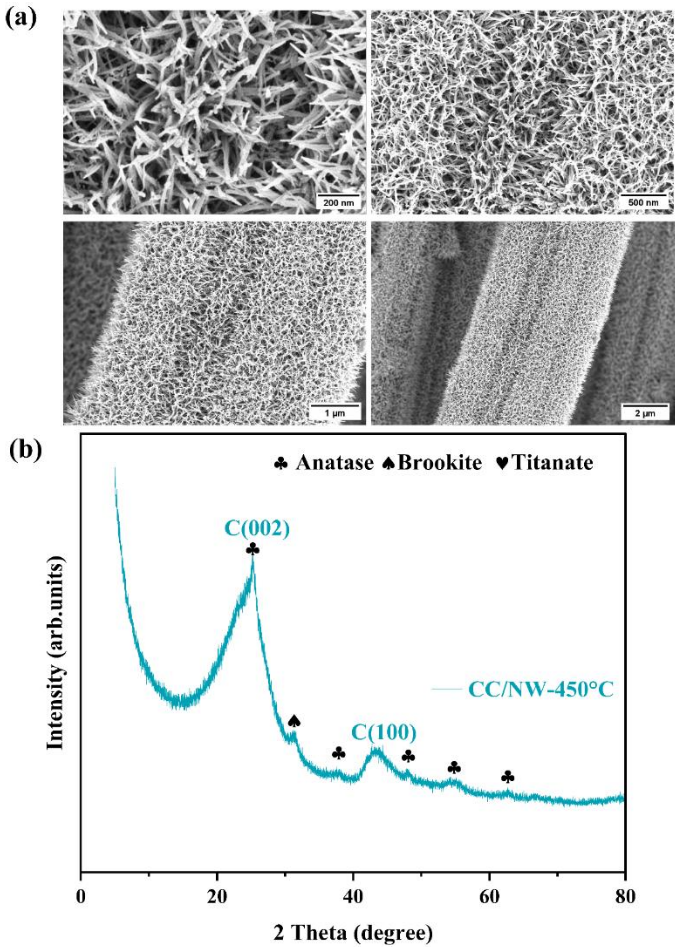


**Figure S8:** (a) FESEM and (b) XRD pattern of CC/NW-450 °C after 6$^{th}$ repeated use, suggesting the morphological and structural stability.

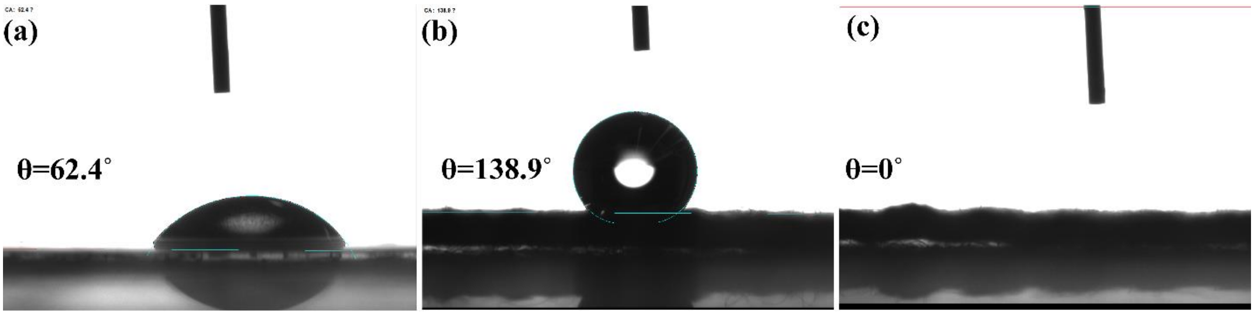


**Figure S9:** Contact angle images showing surface wettability of different samples: (a) Tip/NW-450 °C (θ = 62.4°), (b) pristine carbon cloth (CC) (θ = 138.9°), and (c) CC/NW-450 °C (θ = 0°).