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# Supplementary Materials: Facile Fabrication of F-doped $SnO_2$ Nanomaterials for Improved Photocatalytic Activity

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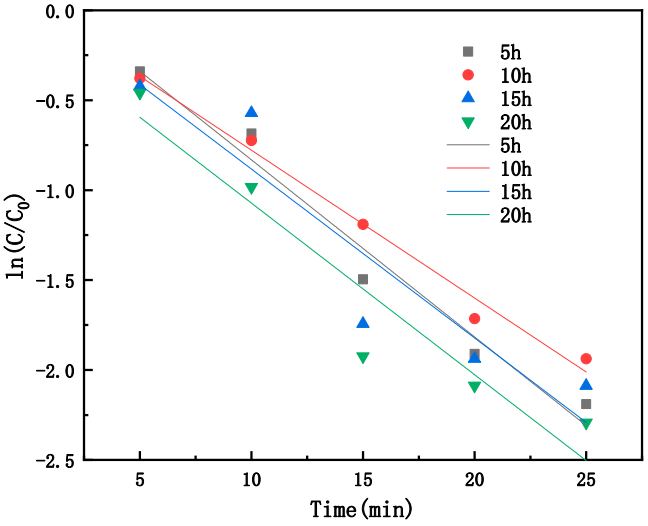
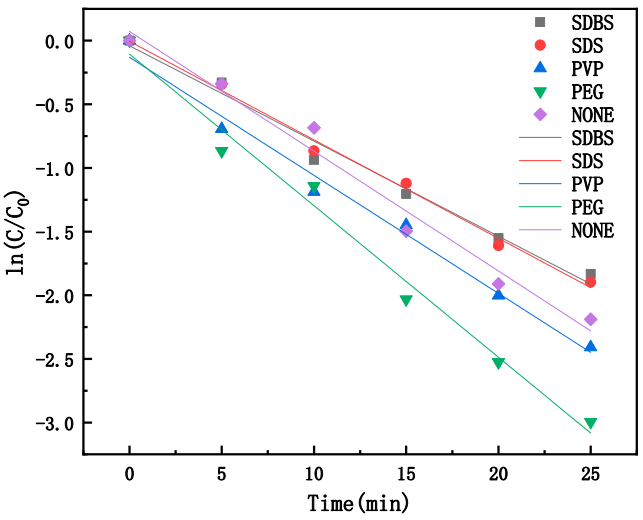



(**a**)




(**b**)

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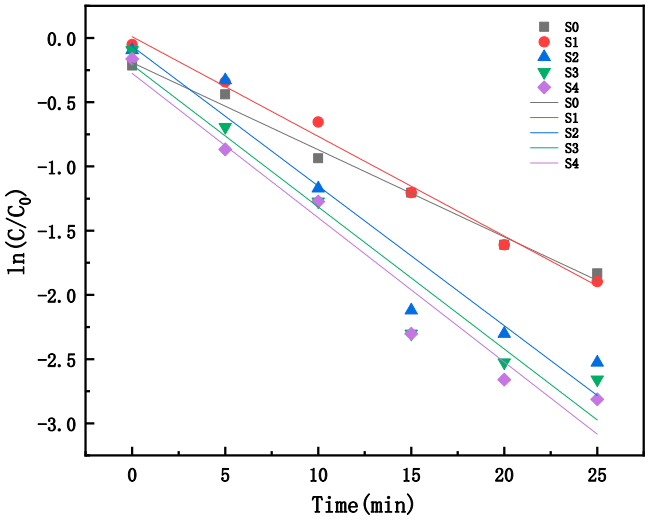


(**c**)

**Figure S1.** pseudo-first-order kinetics of Rh B, (**a**) different solvothermal time (h); (**b**) different surfactants; (**c**) F/Sn.

**Table S1.** First-order kinetics fitting Equation and correlation coefficient ($R^2$) for Different Solvothermal times.

| Different Solvothermal Time (h) | Equation | The Correlation Coefficient ($R^2$) |
|---|---|---|
| 5 | y = −0.09849x + 0.1532 | 0.96041 |
| 10 | y = −0.08221x + 0.04404 | 0.98316 |
| 15 | y = −0.09391x + 0.05623 | 0.83797 |
| 20 | y = −0.09543x − 0.11787 | 0.88489 |

**Table S2.** First-order kinetics fitting Equation and correlation coefficient ($R^2$) for different surfactants.

| Surfactants | Equation | The Correlation Coefficient ($R^2$) |
|---|---|---|
| SDBS | y = −0.07482x − 0.04038 | 0.98055 |
| SDS | y = −0.07738x − 0.00521 | 0.99196 |
| PVP | y = −0.09273x − 0.13069 | 0.98329 |
| PEG | y = −0.1191x − 0.1052 | 0.98186 |
| NONE | y = −0.09411x + 0.07295 | 0.97305 |

**Table S3.** First-order kinetics fitting Equation and correlation coefficient ($R^2$) for different F/Sn ratio.

| F/Sn | Equation | The Correlation Coefficient ($R^2$) |
|---|---|---|
| S0 | y = −0.06783x − 0.19131 | 0.98756 |
| S1 | y = −0.0776x + 0.01029 | 0.98792 |
| S2 | y = −0.10873x − 0.06459 | 0.92503 |
| S3 | y = −0.11058x − 0.20904 | 0.92975 |
| S4 | y = −0.11234x − 0.27547 | 0.94825 |

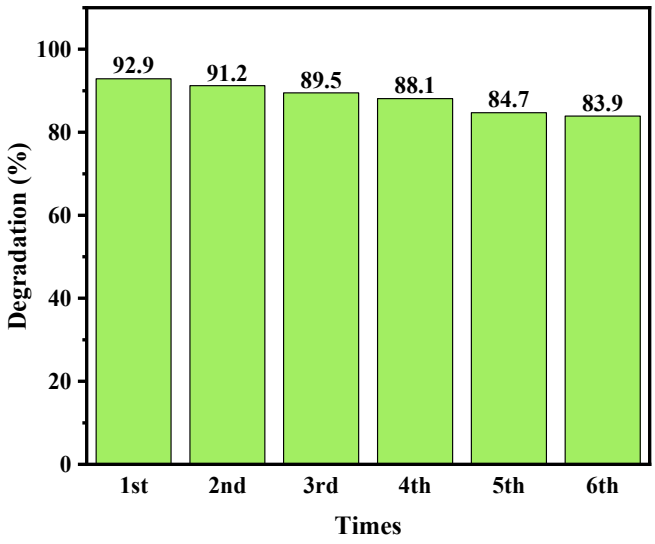


**Figure S2.** The reusability of the S4.