Electronic Supplementary Material (ESI) for RSC Advances.


# Supporting Information

# Effective oil-water mixture separation and photocatalytic dye decontamination through Nickel-dimethylglyoxime microtubes Coated Superhydrophobic and Superoleophilic films

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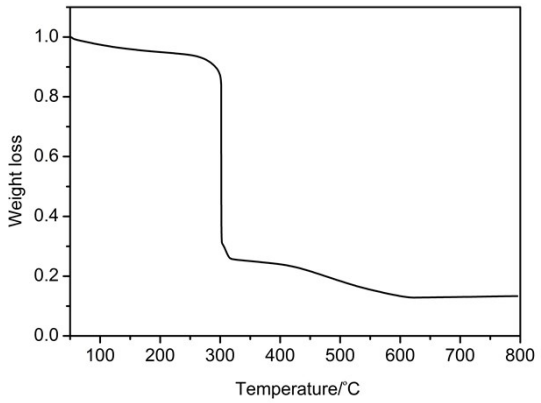



Figure S1. Thermal gravimetric analysis of $[Ni(DMG)_2]$.

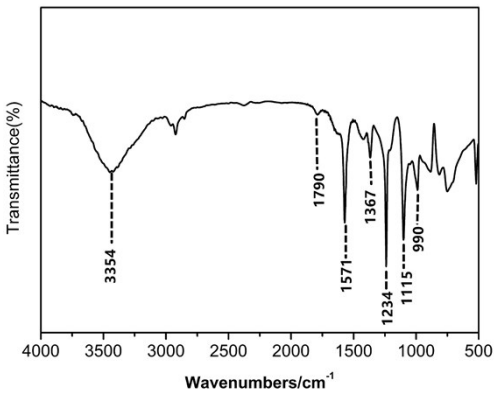



Figure S2. The FTIR spectrum of $[Ni(DMG)_2]$.

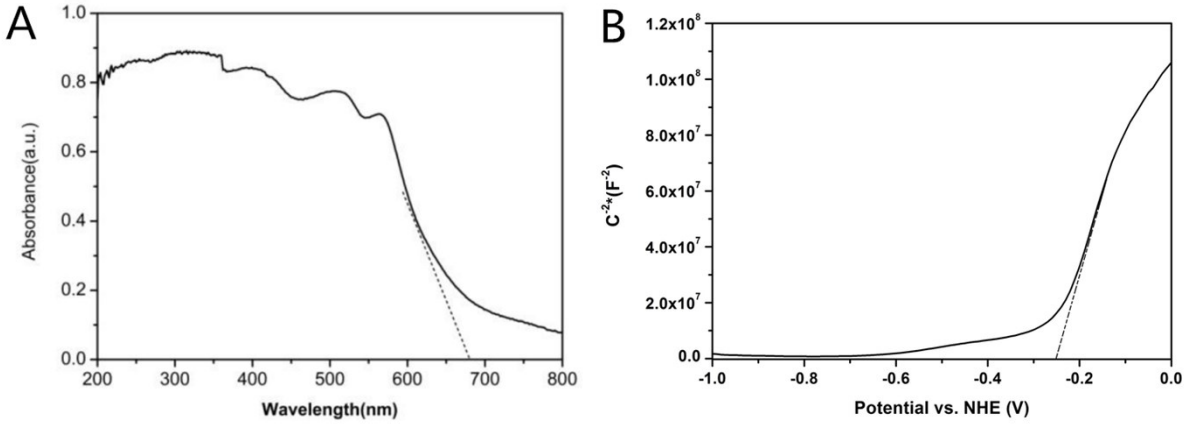


Figure S3. (A)UV-vis diffuse reflectance spectra of [Ni(DMG)$_2$]; (B) Mott-Schottky plots of [Ni(DMG)$_2$].

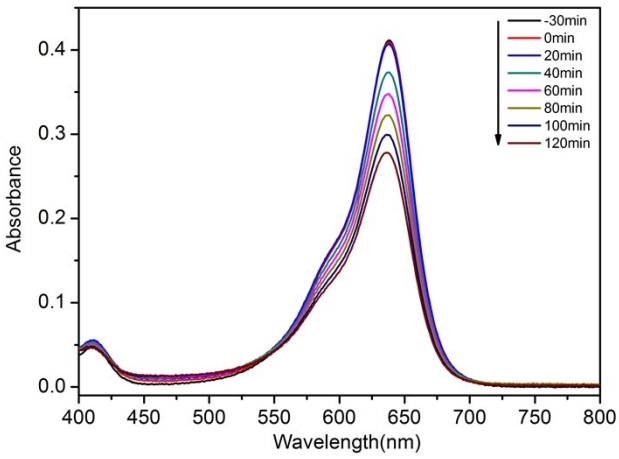



Figure S4. Time evolution of the spectra during the photodegradation of quinoline blue with $[Ni(DMG)_2]$ powder mediated under UV light irradiation.

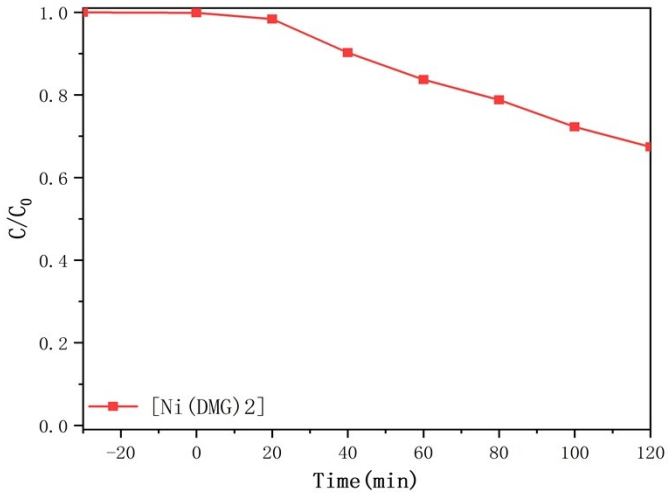



Figure S5. Photodegradation time-change diagram of [Ni(DMG)$_2$] powder samples under ultraviolet light with QB.

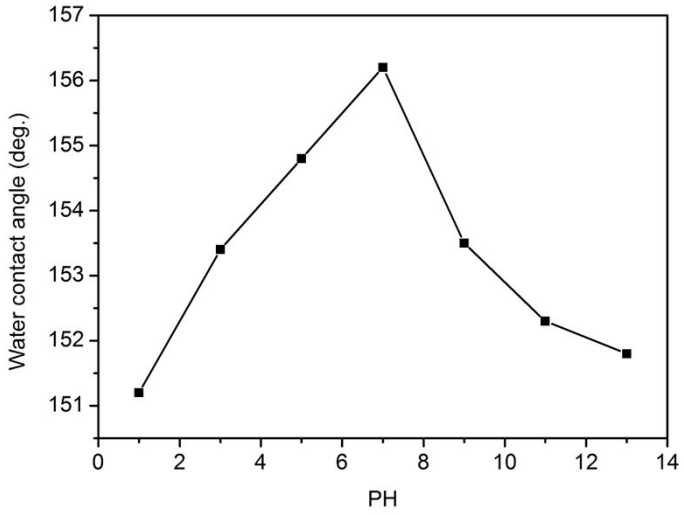



Figure S6. The water droplet CA values according to the coatings immersed in different PH solutions.

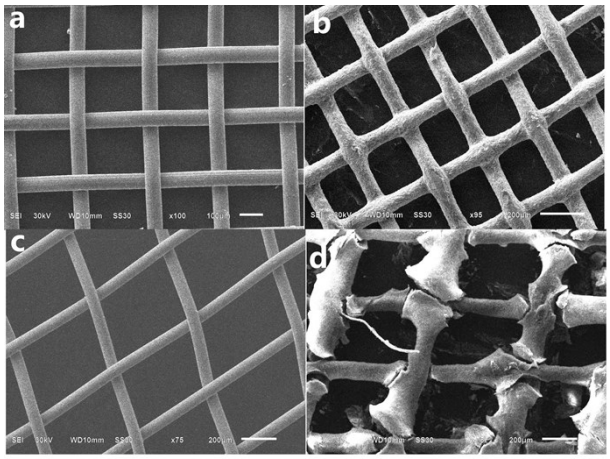
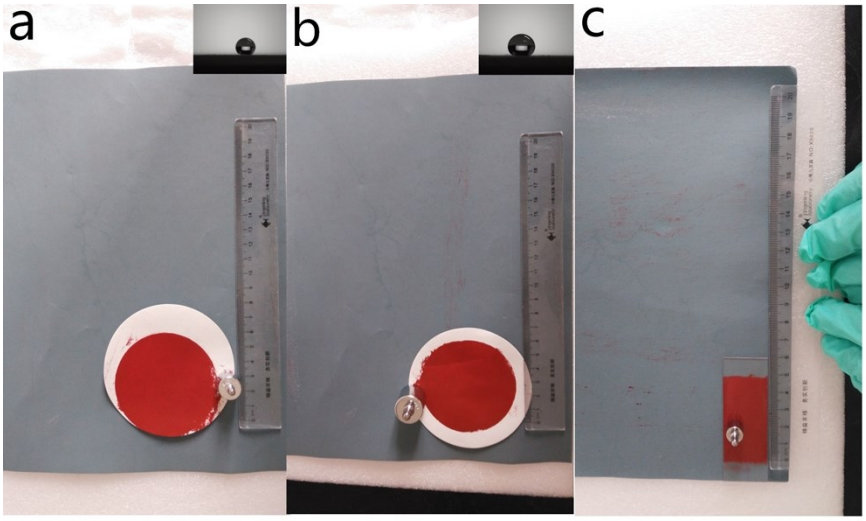



Figure S7. SEM images of [Ni(DMG)$_2$] printed on iron wire mesh and copper grid (b and d); SEM images of pure iron wire mesh and copper grid without modifying by [Ni(DMG)$_2$] (a and c).




FigureS8. The sandpaper-abrasion tests on the superhydrophobic surfaces of [Ni(DMG)$_2$] printed on filter paper and glass slide.

| Photocatalytic additive | shape | Photocatalytic efficiency | Reusability | Stability | superhydrophobicity |
|---|---|---|---|---|---|
| $[Ni(DMG)_2]$ | film | 91% | reusable | stable | superhydrophobic |
| $MnV_2O_6$ | powder | 72% | nonreusable | instable | hydrophile |
| $Ag_3PO_4$ | powder | 57.3% | nonreusable | instable | hydrophile |

Table S1. $[Ni\ (DMG)_2]$ comparison with other transition metal complex-based catalysts

Video S1. Video of [$Ni(DMG)_2$] printed on filter cloth for separation oil from water

Video S2. Video of [$Ni(DMG)_2$] printed on filter paper for separation oil from water

Video S3. Video of [$Ni(DMG)_2$] printed on filter paper for separation oil from water

Video S4. Video of [$Ni(DMG)_2$] printed on copper grid for separation oil from water

Video S5. Video of [$Ni(DMG)_2$] printed on iron mesh for separation oil from water

Video S6. Video of the knife-scratch test on the superhydrophobic surface of [$Ni(DMG)_2$] printed on filter paper.

Video S7. Video of the sandpaper-abrasion test on the superhydrophobic surface of [$Ni(DMG)_2$] printed on filter paper under the weight of 20g.

Video S8. Video of the sandpaper-abrasion test on the superhydrophobic surface of [$Ni(DMG)_2$] printed on filter paper under the weight of 50g.

Video S9. Video of the sandpaper-abrasion test on the superhydrophobic surface of [$Ni(DMG)_2$] printed on glass slide under the weight of 5g.