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Fabrication of bio-inspired metal-based superhydrophilic and underwater superoleophobic porous materials by hydrothermal treatment and magnetron sputtering

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(Including Figure S1~S5 and Table S1, and Movie S1~S9 in the Supporting Information)

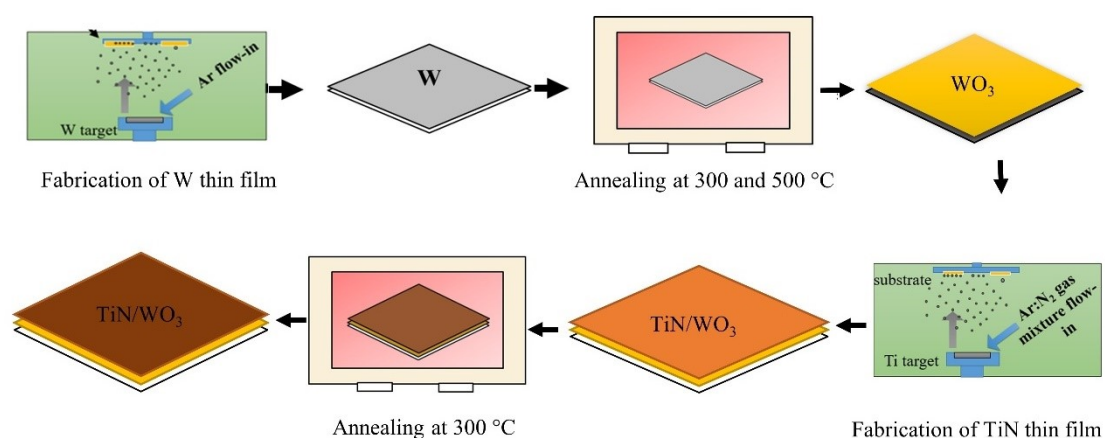


Figure S1. Schematic diagram of the fabrication procedure of the thin TiO_{2-x}N_x/WO₃ film.

Table S1. The atomic percentages of C, N, O, Ti, and W in the TiN and TiN300 films.

Element	Atomic %	
	TiN	TiN300
C1s	33.55	30.4
N1s	18.08	6.98
O1s	27.56	41.35
Ti2p	19.3	19.91
W4f	1.51	1.36

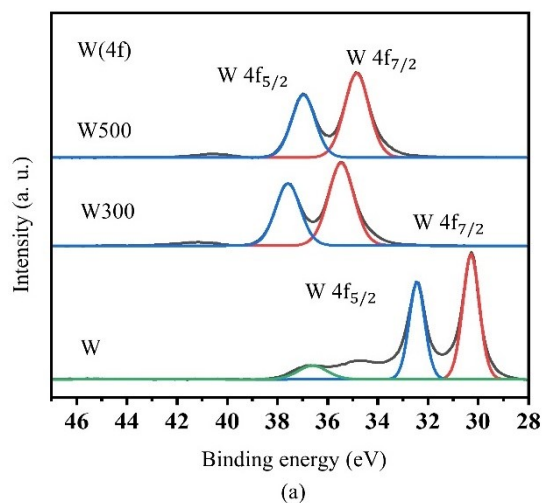


Figure S2. XPS of the prepared thin W film before and after annealing at 300 and 500 °C.

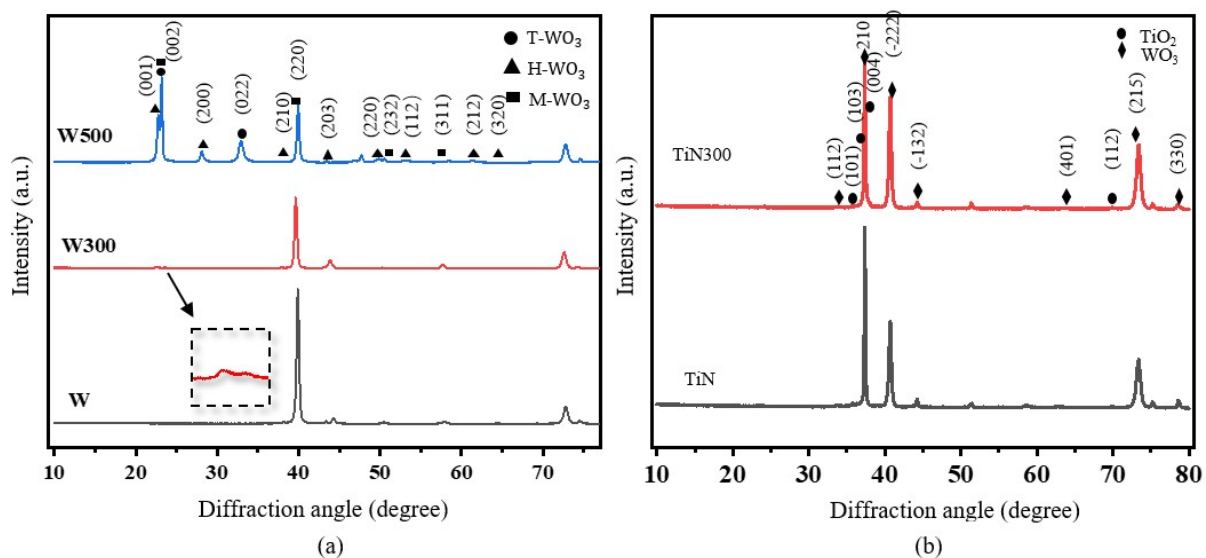


Figure S3. XRD patterns of (a) W film at different annealing temperatures, (b) TiN/WO₃ film at different annealing temperatures. Where (T-WO₃), (H-WO₃), and (M-WO₃) represent the triclinic, hexagonal, and monoclinic structures of W.

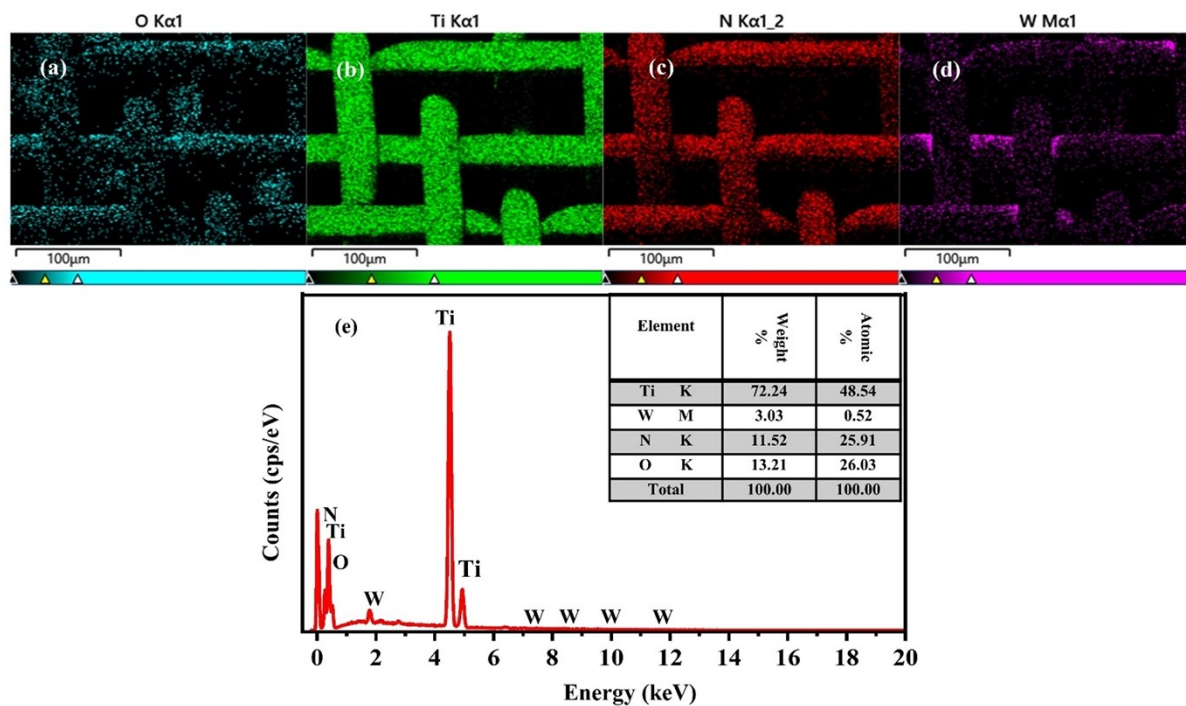


Figure S4. EDS of the TiN/WO₃ film coated a stainless steel mesh and annealed at 300 °C.

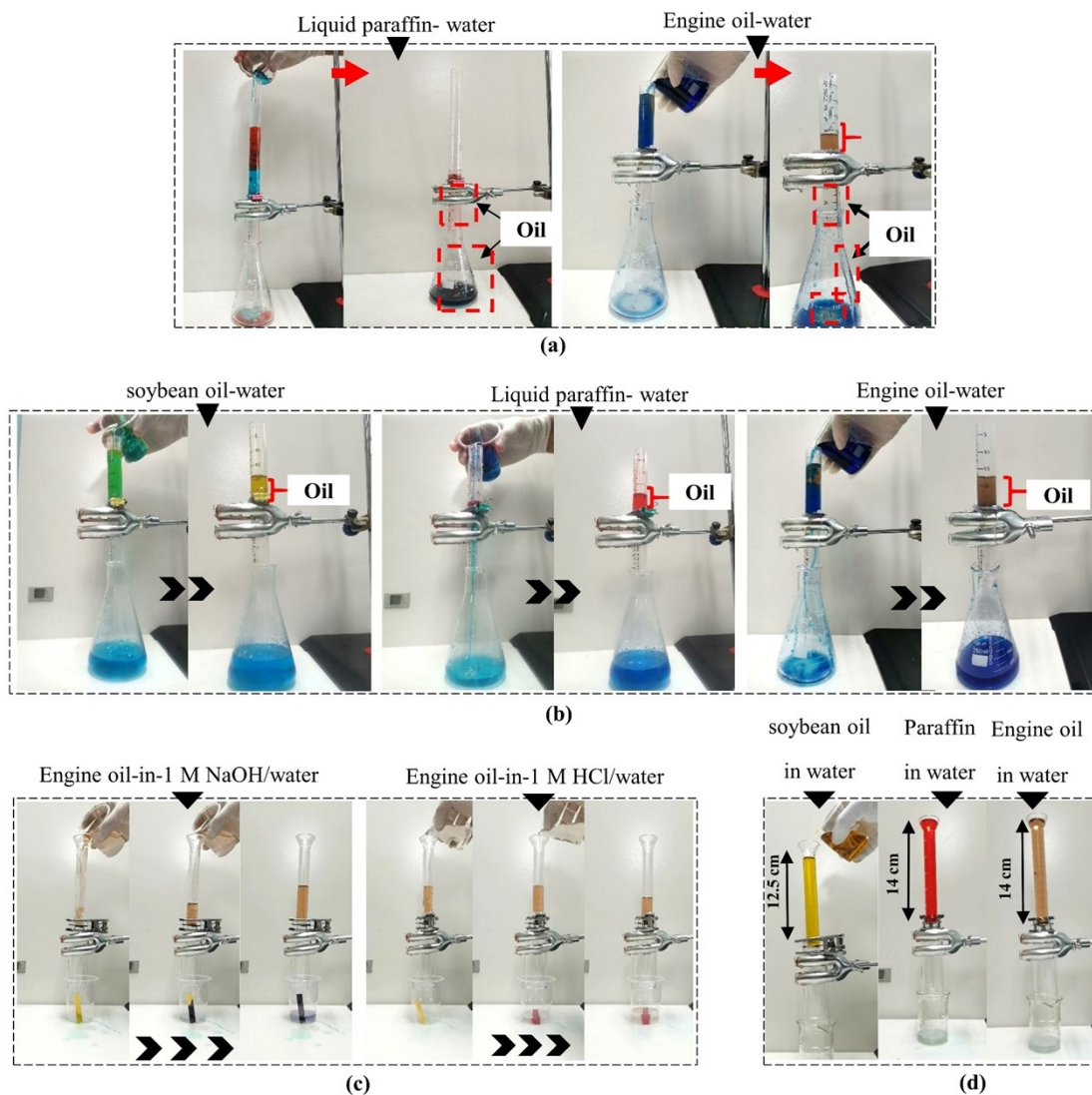


Figure S5. Oil-in-water separation test using (a) unprocessed SSMs, (b) modified SSMs, (c) modified SSMs for oil-in-water with corrosive agents, and (d) is the max high of accumulated oil on the modified SSMs.