

SUPPORTING INFORMATION

As shown in Figure S1, the oleogel can be mixed with different substances to form a homogeneous body.

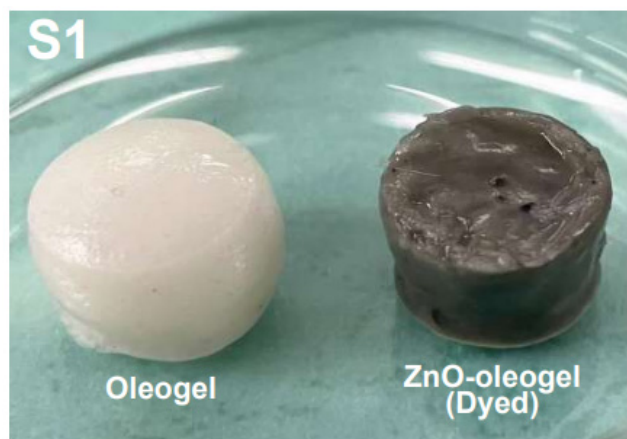


Figure S1. Photographs of the oil gel and the oil gel mixed with nano zinc oxide.

As shown in Figure S2, Nanowires with unit mass can adsorb organic alkanes approximately 12 times their own mass (using hexadecane as an example). NW60 and NW40, mixed with components of nano zinc oxide, produced a dense porous structure and also showed good adsorption of alkanes. However, only NW20 and NZnO components did not adsorb much alkane.

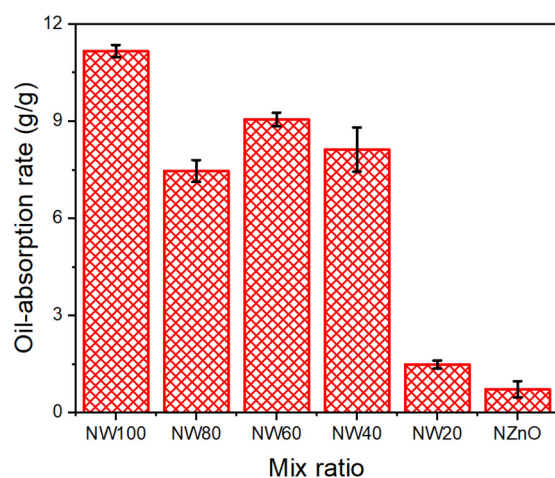


Figure S2. Oil absorption per unit mass of materials of different components.

As shown in Figure S3(i), the oleogel is mixed with different materials, which can improve its strength. However, as shown in Figure S3(ii), the strength of the oleogel remains low, with the highest compressive strength after blending being 0.04 MPa, making it very prone to damage and unsuitable for use as a coating.

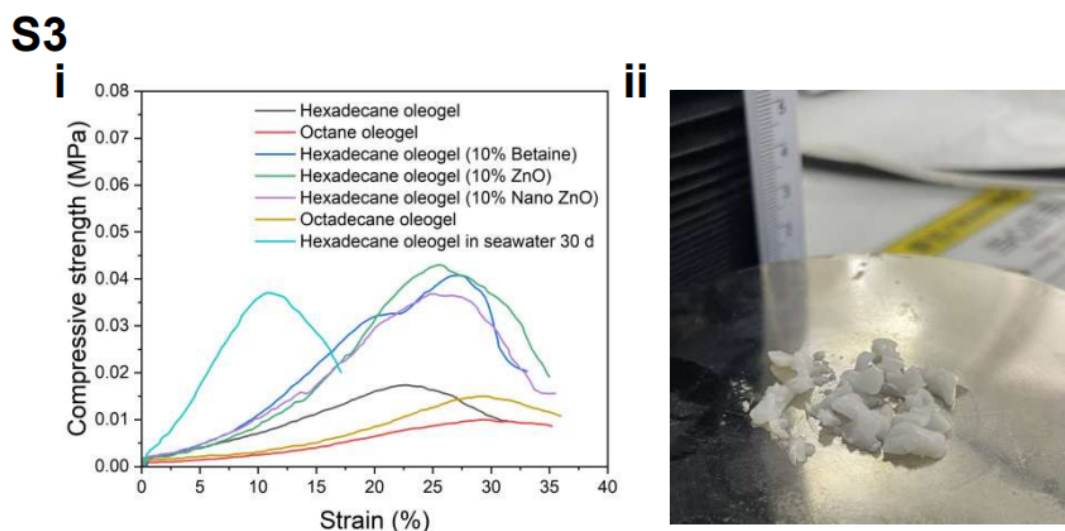


Figure S3. Compressive performance of the oleogel. (i) Compressive strength of the oil gel. (ii) Physical images of the oil gel failure.

As shown in Figure S4, before spraying, (i) the pure nanowire group appears in a curved coiled shape, (ii) NW60 exhibits a loose and porous structure, and (iii) the zinc oxide nanowires show no significant change, appearing granular.

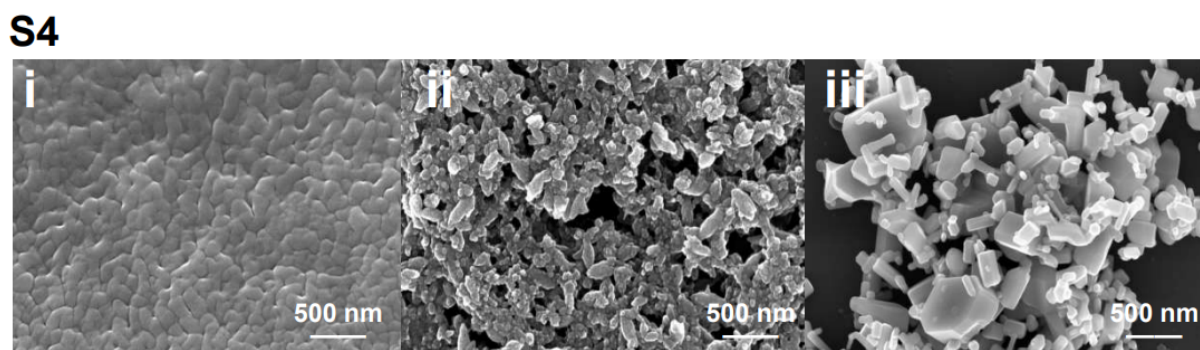


Figure S4. Components before spraying. (i) NW100. (ii) NW60. (iii) NZnO.

As shown in Figure S5, due to being soaked in seawater, with the loss of alkanes, the effect of the liquid-liquid interface is no longer obvious, and most water contact angles show a decreasing trend. Thanks to the excellent nanoporous mechanism generated, the alkane loss of NW60 and NW40 is relatively small, allowing the liquid-liquid interface to be maintained, so the decrease in their water contact angles is relatively low.

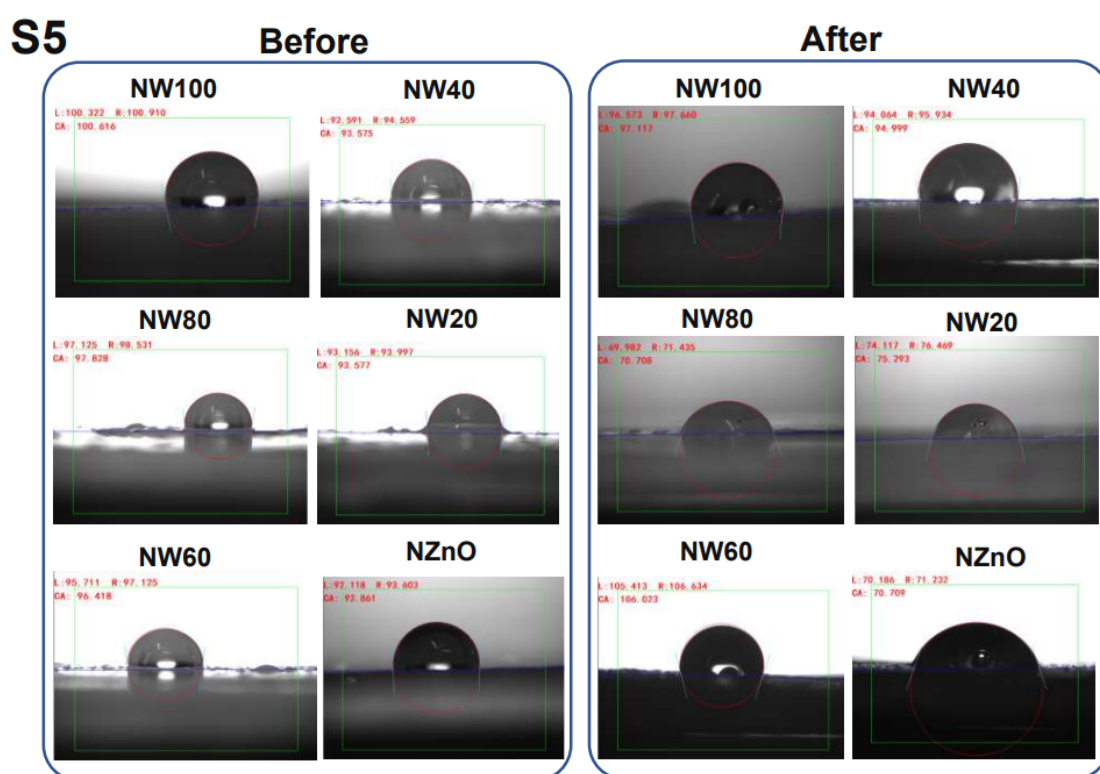


Figure S5. Actual images of water contact angles before and after soaking in seawater for 42 days.

As shown in Figure S6, The sliding speed decreases as the content of nano zinc oxide increases. NW100 exhibits better sliding performance, but NW80 and NW60 can still maintain a good sliding speed. When it comes to NW20 and NZnO, due to the absence of nanowires and nanoporous matrices to capture the lubricating alkanes, water droplets find it more difficult to slide.

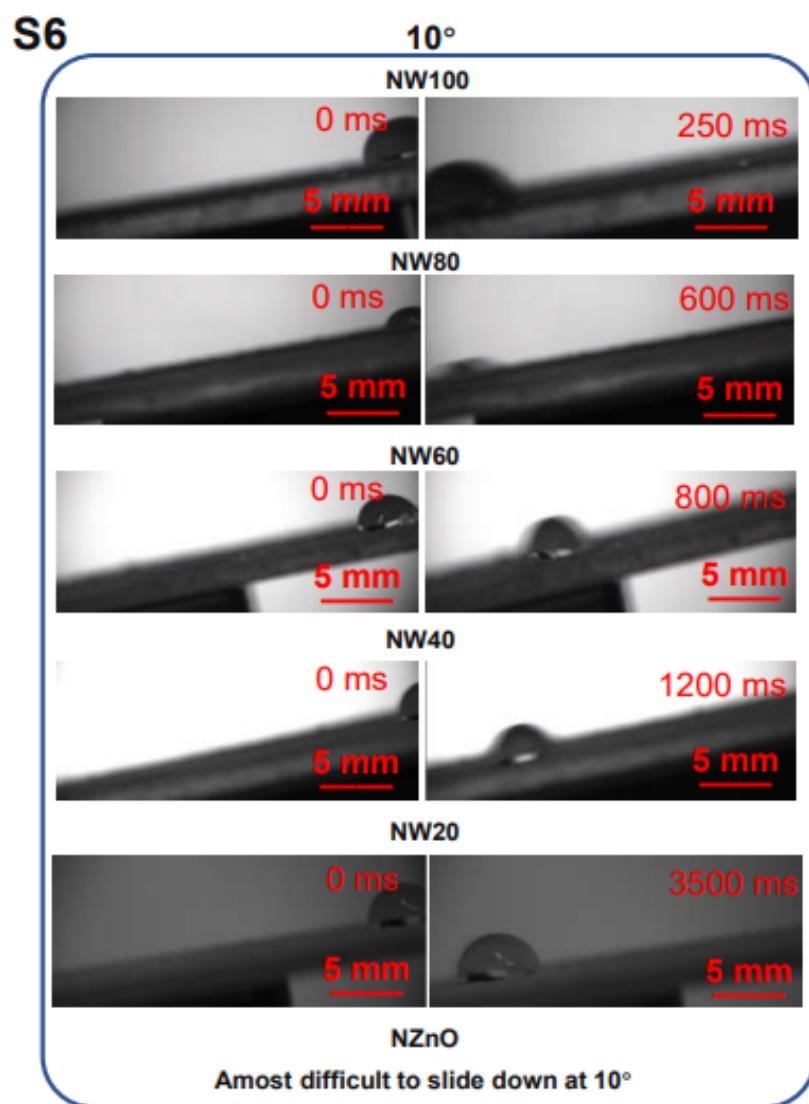


Figure S6. Actual images of water droplets sliding at a 10° incline.