Electronic Supplementary Material (ESI) for Nanoscale.

Electronic Supplementary Information (ESI)

Reconfigurable OR and XOR logic gates based on dual responsive on-off-on micromotors

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Video S1. The motion of the hemisphere-like micromotor activated by UV light.

Video S2. The motion of the hemisphere-like micromotor is started by applying NH_3 and stopped by HCl.

Video S3. The control experiment indicates the micromotor is actuated by NH_3 instead of its airflow. When NH_3 is applied, only the surfactant-containing hemisphere near the center moves; the other one at the upper left position which does not contain the surfactant is motionless.

Video S4. The video showing the micromotor motion when applying both UV and NH_3 from the same side.

Video S5. The micromotor moves when UV is first applied and then decelerates and stops when NH_3 is applied from the opposite direction.

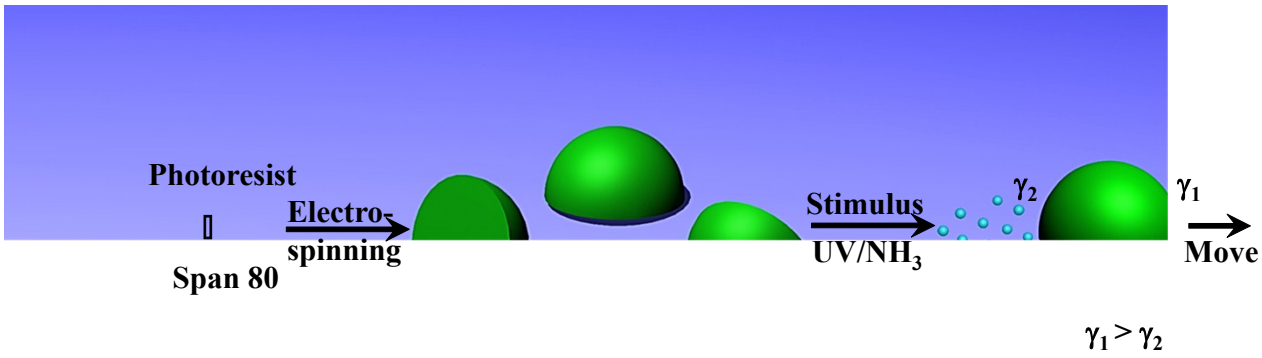

Fig. S1 Schematic illustration of the fabrication of the dual-responsive micromotor.

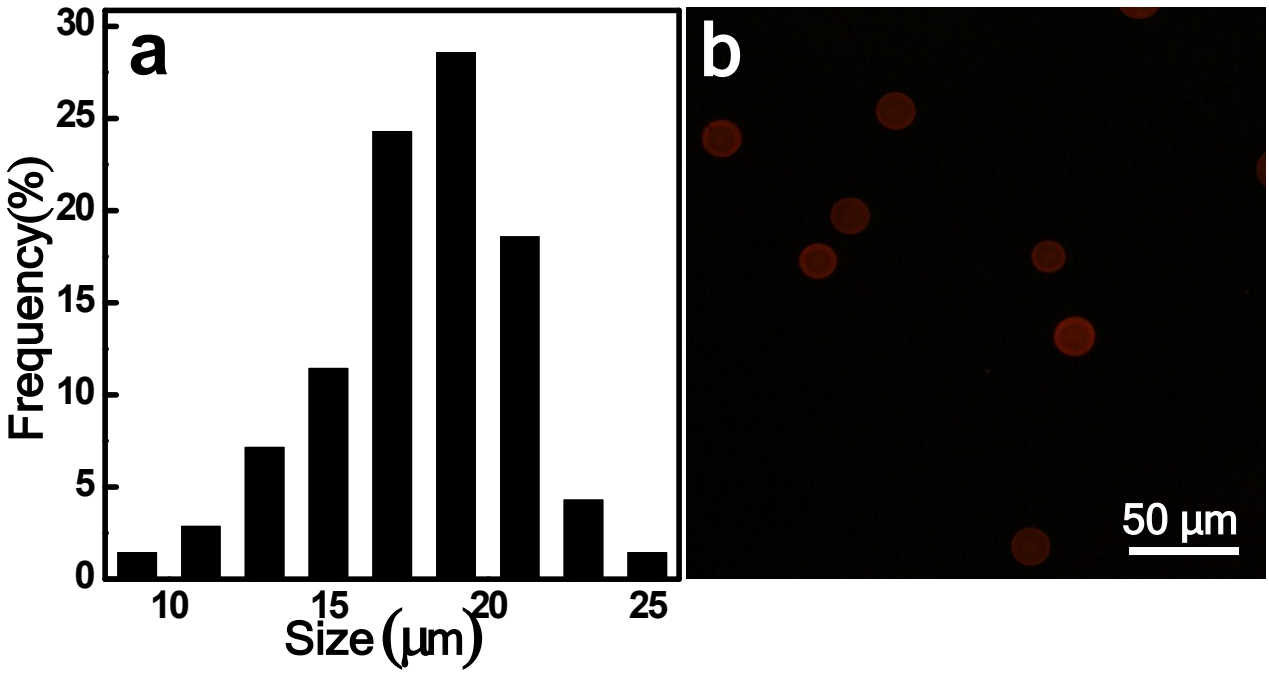

Fig. S2 (a) Size distribution histogram of the micromotor, which has an average diameter of approximately 19 μm. (b) Fluorescence image of the micromotor containing a fluorescence dye.

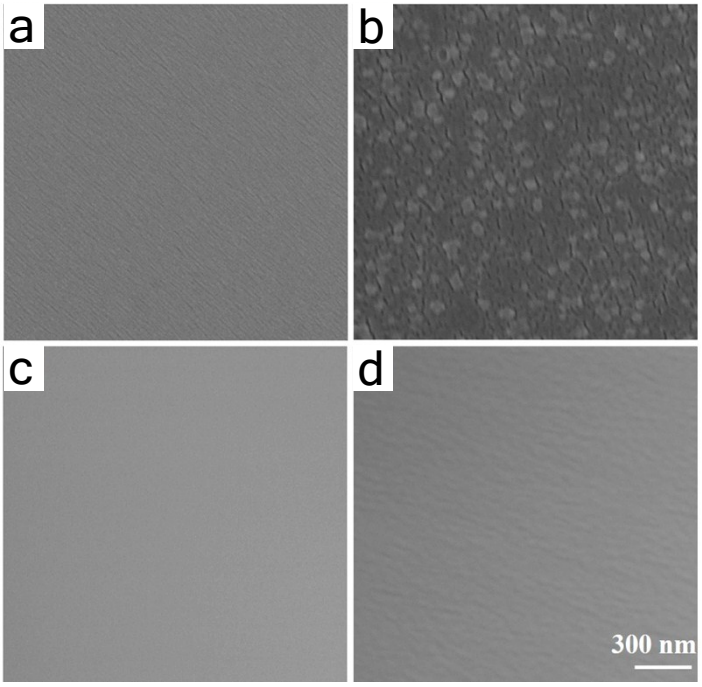

Fig. S3 SEM images showing the surface morphology of the hemisphere-like micromotor: (a) before UV exposure; (b) after UV exposure for 60 s; (c) after soaking in the HCl solution for 30 s; (d) after soaking in the NH_3 solution for 30 s.

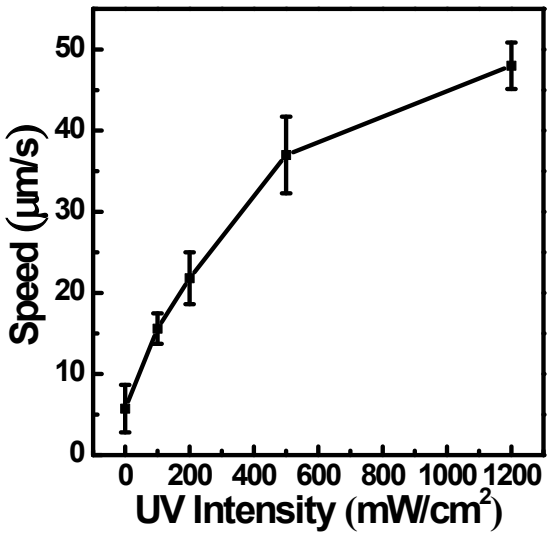

Fig. S4 The dependence of the moving velocity on the UV intensity.

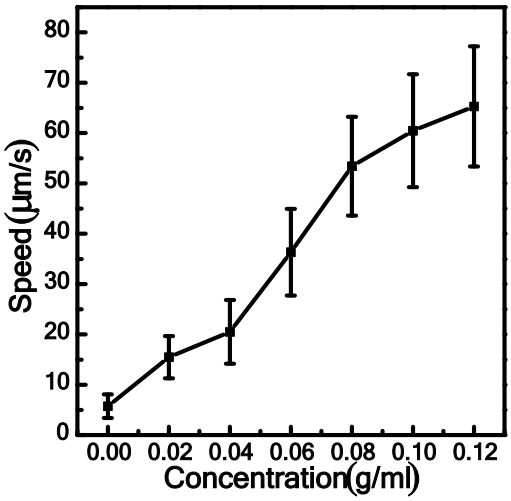

Fig. S5 Dependence of the average moving velocity of the hemisphere-like micromotor on the concentration of span 80.

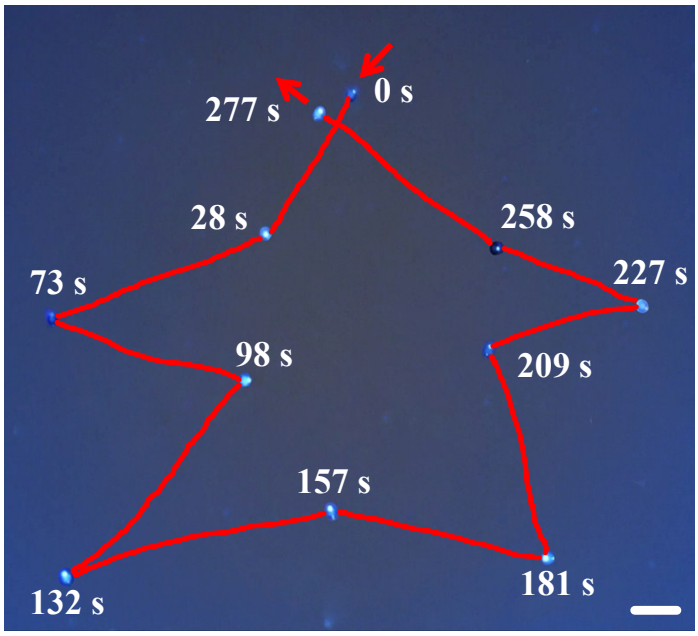

Fig. S6 The motion of one hemisphere-like micromotor during 277 s under the influence of UV light. The UV light is utilized to control its on-off-on motion and moving direction, so that a pentagram shaped trajectory is obtained. Scale bar is 100 μm.